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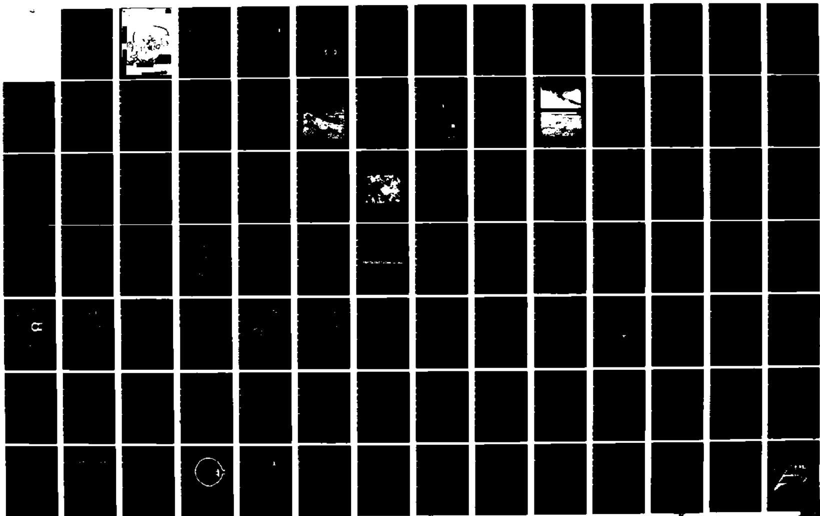

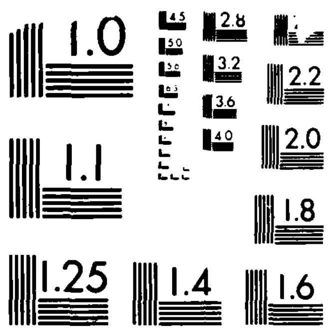
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VOLUME 2: EXCAVATION AND ANALYSIS 1975 SEASON

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ARCHEOLOGICAL INVESTIGATIONS IN COCHITI RESERVOIR, NEW MEXICO
VOLUME 2: EXCAVATION AND ANALYSIS 1975 SEASON

Edited by

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with
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Submitted by

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Principal Investigator
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to

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for

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Albuquerque

1977

PREFACE

This volume constitutes the second in a publication series concerning the Cochiti Reservoir Archeological Project undertaken by the Office of Contract Archeology, University of New Mexico. Located in the Rio Grande Basin of northcentral New Mexico, this multiphase research program, extending over a period of three years, encompasses a cultural resource assessment, two intensive surveys of the reservoir boundaries, and two mitigative phases ameliorating adverse impacts upon cultural resources located within these boundaries.

Volume 1 of this series, entitled *Archeological Investigations in Cochiti Reservoir, New Mexico Volume 1: A Survey of Regional Variability*, edited by J.V. Biella and R.C. Chapman, 1977, focused on an overview of the initial assessment and the intensive surveys of the permanent and flood control reservoir pools. The present volume considers mitigative studies conducted within the permanent reservoir pool. Forthcoming reports will concern various research aspects of the mitigative studies in the flood control pool.

The present research program undertaken by the Office is implemented under the auspices of various Federal authorities which mandate the recognition that cultural resources constitute limited and nonrenewable phenomena and, as such, warrant appropriate preservation and conservation measures to insure long-term productivity and benefit to the American public. In order to gain an understanding of the scope of this substantial research program and its results, it is necessary to be cognizant of the circumstances which conditioned the strategy of proposed research and its implementation.

Although anthropological investigations were initiated for the Cochiti Reservoir Project in the early 1960's, this work only partially provided information on the density, distribution and types of cultural resources located within the project area. Furthermore, mitigative investigations during this period were not structured to yield information on overall settlement patterns, subsistence strategies, or activities of the various cultural adaptations present in the project area and study region. A realization of the need for additional research in the project area initiated the present program sponsored by the United States Army Corps of Engineers, Albuquerque District, and administered by the National Park Service, Southwest Region.

Our present research was designed to provide intensive documentation of all cultural resources located in the Reservoir boundary and to maximize, under existing fiscal and time constraints, the recovery of data by means of mitigative measures. This was made possible by establishing the significance of the resources to be adversely impacted and then employing a sampling strategy which would most effectively represent information content of the site population.

Funding and project scheduling obviously conditioned the scope of the investigation; however, in the case of the Cochiti Reservoir Archeological Project, these factors assumed greater importance. Since anthropological studies were not incorporated into the Reservoir planning stage, for the most part, the field work stage reported upon in this series was being undertaken in essentially a salvage framework.

By necessity, the various research phases were subjected to adjustment and modification before and during the course of project implementation. In this regard, research designs and attendant problem orientations, sampling frames, data collection and analysis reflect what we ascertained to be feasible under the circumstances. Conjointly, decision-making was further influenced by several other variables which included logistical considerations relative to the remoteness of certain localities in the project area, inclement weather, and seasonal fluctuations in the reservoir gradients.

As a consequence of these factors, research directions were structured to focus on explicating and potentially explaining variation in the subsistence activities and settlement patterns of cultural systems documented in the study area. Basic to the implementation of this research strategy is the delineation of regional boundaries of human occupation. Such boundaries are expected to vary between different subsistence strategies and the resources utilized within the environment. Furthermore, environmental change from the Pleistocene to the present conditioned the nature and availability of resources and thus segmented the landscape into subsistence units relevant to particular adaptive strategies.

Due to the magnitude of the investigations in the ongoing research program, this volume will provide *descriptive information* on sites excavated and tested during the mitigation phase of the project. This report and the forthcoming Volume 3 will be data-oriented and, as such, are supplemental to the interpretative report which will constitute Volume 4, the last in the Cochiti Reservoir Archeological Project Series. Maximum effort has been directed to developing and sustaining continuity between reports in this series. Partitioning the research results, as represented in this series, was deemed the most productive format for timely dissemination of information within project schedules. This intention is consistent with logically presenting the various project phases, which involved considerable administrative and research coordination, and, in addition, avoids the extended delays frequently incurred in the preparation of a substantial final report.

As in the intensive survey of the reservoir boundaries reported upon in Volume 1, the Cultural Resource Management Division of the Department of Sociology and Anthropology, New Mexico State University, under subcontractual agreement, participated in the mitigation of sites located within the permanent flood pool of the reservoir. Excavation and testing was conducted simultaneously by both institutions, however, laboratory analysis was completed at the respective institutions. Data derived from the New Mexico State University excavations and laboratory analysis are provided in this volume.

Frank J. Broilo, Principal Investigator
Director
Office of Contract Archeology

June, 1977

ACKNOWLEDGMENTS

This volume is the result of several phases of field and laboratory research and represents the efforts of a great number of individuals over a 24 month period. We wish to express our thanks and appreciation to these individuals.

Frank J. Broilo served as principal investigator and Jan V. Biella was project director. A portion of the field excavation and laboratory analysis was undertaken by personnel from the Cultural Resource Management Division of the Department of Sociology and Anthropology, New Mexico State University, under the direction of Stanley D. Bussey. Richard C. Chapman served as overall field director during the excavation phase. NMSU field personnel included supervisory archeologists Karl Laumbach (LA 5014, LA 12511), Billy J. Naylor (LA 12512, LA 12522) and Shirley A. Rorex (LA 5013); and assistant archeologists Van Albertson, Mark Bond, Victoriano Contreras, L. Jean Hooten, Richard Kelly, Colleen McNulty, Frank Schulte, Dennis Toom and Jeff Worrell.

Office of Contract Archeology field personnel included supervisory archeologists James G. Enloe (LA 12443, LA 12447, LA 12448, LA 12456, LA 12463, LA 12468), Patricia J. Marchiando (LA 9138, LA 12454, LA 12495, LA 12517, LA 12518, LA 12519, LA 12524), Marcel Kornfeld (LA 12496), Michael P. Marshall (LA 12161), John R. Stein (LA 10110, LA 10111, LA 12449, LA 12365), and Richard Wessel (LA 9139, LA 12444, LA 12483, LA 12486, LA 12494, LA 12507).

Assistant archeologists for OCA included Emily K. Abbink, Lynne Arany, John W. Beardsley, Thomas Folgham, Lee R. Heinsch, Susan B. Hunter (alidade maps), Karol J. Klager, Marcel Kornfeld, Michael P. Marshall, E. Ann Ramage, James Rancier, Michael H. Schneider, Sara Stech and John R. Stein.

Field camp facilities and operations were provided by NMSU. Allen Rorex was cook, and Paul Milner served as cook's helper.

Mr. and Mrs. Fred Dixon were extremely kind in allowing use of a campsite situated along the Rio Chiquito below their apple orchard. Their tolerance of that large and occasionally boisterous settlement in the midst of an otherwise serene, if not bucolic, setting reflected a spirit of concern and interest in the project for which we are deeply grateful.

The U.S. Army Corps of Engineers, Albuquerque District, provided logistical support through transporting excavation equipment via helicopter to some of the more inaccessible site locations at the beginning of the project. The combination of variable weather conditions and changing pool levels within the reservoir during the excavation phase necessitated constant communication with Corps personnel, and we wish to thank, in particular, Dave Clawson and Mark Sifuentes (Environmental Resources Division) and Jerry Hammers and the staff of the Cochiti Resident Office for their cooperation in this regard.

Laboratory analysis was conducted independently both at the Office of Contract Archeology, UNM; and at the Department of Sociology and Anthropology, NMSU. NMSU analysis was undertaken by Beth Bussey, Karl Laumbach, Shirley Rorex and Toni Sudar-Murphy. Richard Kelley prepared initial drafts of field maps, and Dabney Ford completed final drafting.

Jan V. Biella and Richard Chapman coordinated laboratory research on the UNM campus. Patricia J. Marchiando was laboratory supervisor, and Jeanne A. Schutt was laboratory coordinator. Analysts included Elizabeth Kasner, C.H.R. Mashburn, Joan Mathien, E. Ann Ramage, and Sara M. Stech.

Ceramic analysis was undertaken by A.H. Warren; flotation analysis by Mollie B. Streuver; historic artifact analysis by Emily K. Abbink and John R. Stein; and obsidian hydration analysis by Charles Haecker. We are grateful to Cynthia Irwin-Williams for allowing the use of hardware on the Eastern New Mexico University campus for the obsidian hydration analysis.

Faunal remains were identified under the direction of Arthur H. Harris, Museum of Arid Land Biology, the University of Texas, El Paso. Analysis of butchering strategies and bone tools was conducted by Jeanne Schutt based upon that identification.

A number of individuals are to be thanked for suggestions, comments or identification with respect to different kinds of analysis. Lewis R. Binford (Department of Anthropology, UNM), Charles A. Reher (Department of Anthropology, University of Wyoming) and Dennis Stanford (Smithsonian Institution) offered useful suggestions concerning different aspects of faunal and bone tool analysis. Barry S. Kues (Department of Geology, UNM) identified several snail and mollusk shell fragments; and Rodney C. Ewing (Department of Geology, UNM) conducted potassium mercuric thyocynate tests to verify the presence of hematite stains on several artifacts.

W. James Judge (Chaco Research Center, National Park Service) was of considerable help as a general consultant concerning a variety of organizational and research concerns. He has no doubt forgotten the inadvertant inundation study he performed while collecting archeomagnetic samples from LA 12522, and we will not remind him of it here.

Lynn B. Jorde served as computer programmer throughout the duration of the project, and we are indebted to him for his unfailing good nature and tolerance in the face of, at times, considerable absurdity.

Final site report descriptions were the result of a joint effort on the part of many individuals. Both initial and final drafts of different reports were written by Jan V. Biella, Richard C. Chapman, James G. Enloe, Patricia J. Marchiando, Jeanne A. Schutt and John R. Stein. In general, those who served as supervisory archeologists during excavation (Enloe, Marchiando and Stein) wrote initial descriptive drafts. Those drafts then underwent substantial revision by the original writers or others, such that the final drafts are, in most cases, impossible to attribute to any given individual.

Helene Warren prepared initial summary discussions of ceramic artifact variability, and Jeanne Schutt wrote initial summaries of bone tool and faunal variability. C.H.R. Mashburn developed overlay maps of artifactual distributions, and both Mashburn and Enloe defined provenience locales based upon those maps. Jeanne Schutt developed initial drafts of architectural features

ACKNOWLEDGMENTS (con't)

from field maps, and final drafting of all maps and figures was undertaken by Susan McLean, Emily K. Abbink and Jerry Livingston.

Microphotography and other detail photography was undertaken by Alan Kennish, while final printing of most other photographs was performed by Robbie Mashburn and C.H.R. Mashburn.

The tedious job of typing and retyping the multiple draft manuscripts leading to the production of this volume was undertaken with considerable dedication, and amazing good will, by several individuals at different times. We are especially grateful to Mary Abernathy and Catherine Lopez.

Editing and final proofing was undertaken by all who contributed to writing the site reports. In addition, John B. Broster, David C. Eck, Bonnie Bagley and James G. Enloe spent considerable time proofreading.

Richarc C. Chapman
Jan V. Biella

June, 1977

FOREWORD

Volume 2 has been conceived and produced as a "data" book: one of those compendiums of terse description, maps, photographs, tables and overtly tentative statements of possible conclusionary relevance which are viewed by some as the traditional bane of archeological endeavor and by others as the substance of true science. As editors of this volume, we cannot but agree with both viewpoints.

The archeological site locations described in this volume no longer constitute a part of our heritage. They have been destroyed. The manner of their destruction has been that of "scientific" excavation. Many other site locations within the Permanent Pool boundaries of Cochiti Reservoir are, as of this moment, undergoing a slower, but as sure, destruction through the effects of long-term inundation.

The data presented here concern those site locations we have destroyed through our investigation. These data constitute no more and no less than an accounting of observations made by individuals who engaged in archeological excavation of those sites, and by individuals who engaged in examination of artifactual remains recovered through those excavations.

The nature of this accounting will be subject, hopefully, to criticism by those who share our concern in refining means through which the archeological record of past human behavior can be employed as information bearing upon our future alternatives.

For those readers who stand in fear and loathing of description for description's sake, we have made an honest effort to provide a substantively fearful and loathsome document.

For those readers whose sensibilities are affronted by effete intellectual discussion of theory and methodolo[illegible] we have made every effort to insure delineation o[illegible]etical and methodological implications felt to u[illegible]rlie all aspects of description presented.

[illegible]tempting to realize both these needs, that of des[illegible]ion on the one hand, and warranting the manner [illegible]ription on the other hand, has been an unrelenti[illegible]amically changing and often brutally tedious en[illegible]or. For those individuals involved in the production of this volume, the thrill of discovery has been balanced by the agony of research. We hope the document imparts a sense of that balance to the reader.

Richard C. Chapman
Jan V. Biella

June 1977

ARCHEOLOGICAL INVESTIGATIONS IN COCHITI RESERVOIR, NEW MEXICO
VOLUME 2: EXCAVATION AND ANALYSIS 1975 SEASON

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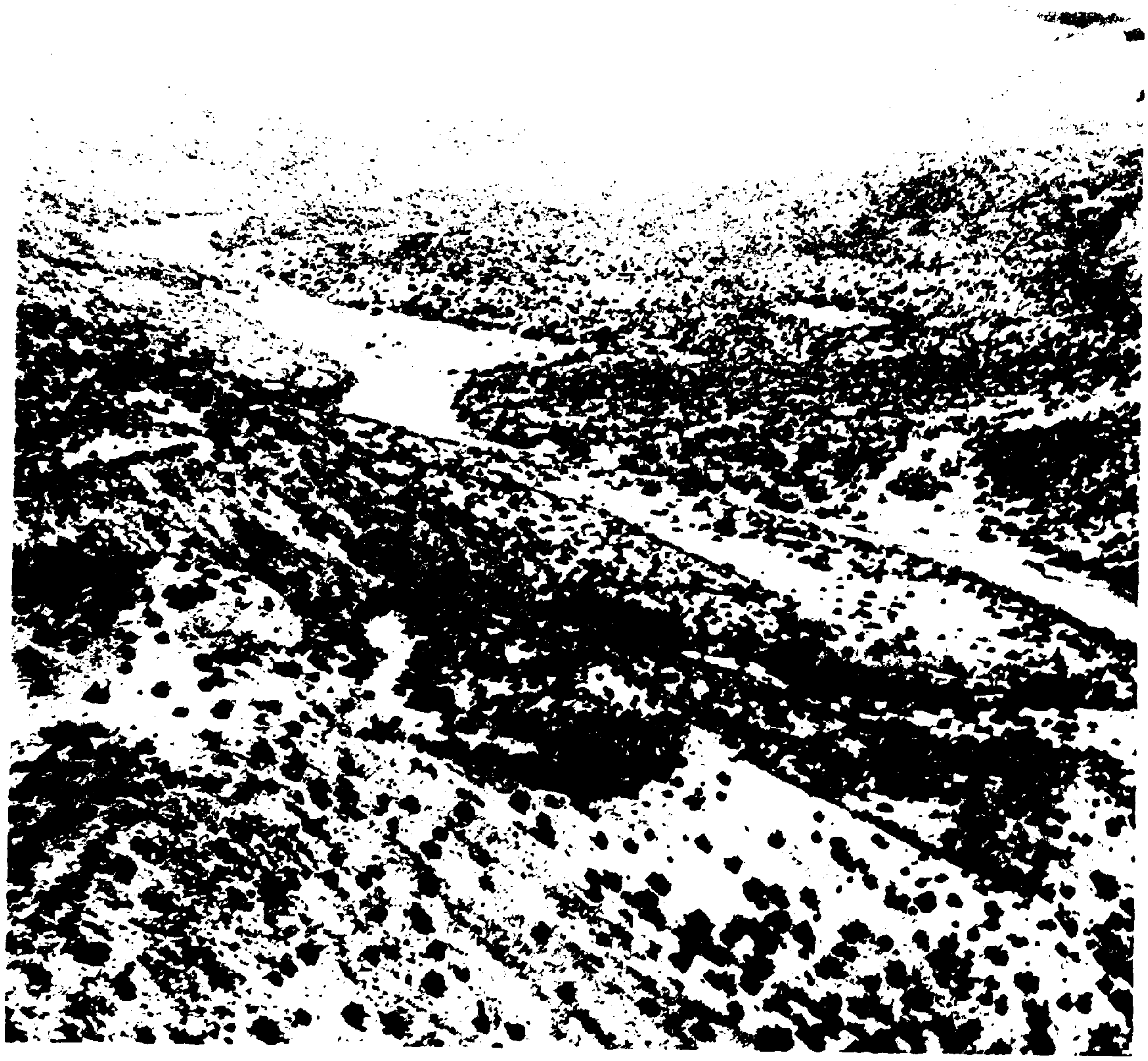

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Chapter 1
Program for Mitigation of Archeological Resources in the Permanent Pool of Cochiti Reservoir

JAN V. BIELLA

INTRODUCTION

The archeological research reported in this volume presents results of a program of mitigation for those cultural resources adversely impacted by the permanent pool of Cochiti Reservoir. This work represents only one phase of a multiphase cultural resources management program undertaken by the Office of Contract Archeology, Department of Anthropology, University of New Mexico, in cooperation with the Cultural Resources Management Division of the Department of Anthropology, New Mexico State University. The U.S. Army Engineer District, Albuquerque, sponsored the mitigation phase of the research program, under administration of the National Park Service, Southwest Division, Santa Fe.

LOCATION AND EXTENT OF PROJECT AREA

Cochiti Reservoir is located in the Rio Grande Basin of northcentral New Mexico. It lies at the base of the eastern flank of the Jemez Mountains in a deep narrow canyon, White Rock Canyon, which opens above Cochiti Pueblo in the upper Middle Rio Grande Valley. The general area is characterized by hills, digitate mesas and narrow canyons. Prominent features include the erosional canyons of the Pajarito Plateau, to the west of White Rock Canyon, and the basalt mesas of the Cerros del Rio and the La Bajada fault scarp, east of the canyon. Elevations in the reservoir only range from 5280 to 5460 ft although elevations on the Pajarito Plateau to the west exceed 7800 ft. Precipitation varies from 8 to 12 inches annually, with the majority of rain falling between April and October. The climate is generally mild.

Cochiti Reservoir is located in the Upper Sonoran Life Zone, although Transition and Canadian Life Zones occur on the Pajarito Plateau. White Rock Canyon supports a highly diverse complement of flora and fauna. Diversity decreases below the mouth of White Rock Canyon near the Santa Fe River. More extensive discussion of environmental variability characteristic of the Cochiti Reservoir Study Area, including geology, climate, vegetation, fauna, surface water supply and arable potential can be found in Section II of Biella and Chapman (1977).

Within Cochiti Reservoir two distinct project areas may be defined: the permanent pool or reservoir itself, and the flood pool or projected flood pool control area.

1. Permanent Pool

The permanent pool lies almost completely in White Rock Canyon and follows the 5322 ft contour upstream from Cochiti Dam. The main portion of the permanent pool is approximately 2.4 kilometers long and 0.8 kilometers wide, although the pool extends to the mouth of Alamo Canyon nearly 13 kilometers above the dam. The permanent pool will encompass approximately 1240 surface-acres with a shoreline of 34 kilometers. The cultural resources directly impacted by the permanent pool are expected to be flooded with silt deposited for the duration of the dam, in excess of 100 years (U.S. Army Engineers 1974: I-4, VI-1).

2. Flood Control Pool

One of the major intents of Cochiti Dam is to arrest the damaging floods downstream in the heavily populated Middle Rio Grande Valley. Thus the largest number of cultural resources potentially endangered by the reservoir are those located within the projected flood pool area. At maximum extent the flood control pool would encompass 9060 surface-acres and would extend from the Santa Fe River north into White Rock Canyon approximately 32 kilometers. It will have a shoreline of nearly 152 kilometers at the maximum projected 5460.5 ft elevation (U.S. Army Engineers 1974- I-3).

3. Cochiti Reservoir Study Area

A third geographic unit, the Cochiti Reservoir Study Area, was defined to provide a regional frame of observation for environmental and archeological variability consistent with the overall research goals of the project. This study area encompassed approximately 1325 square kilometers and was situated between 106°30' and 107° 7'15" north latitude and 35°52'30" and 35°52'32" east longitude.

COCHITI RESERVOIR ARCHEOLOGICAL PROJECT

When the Final Environmental Statement was issued in February 1974, a comprehensive and intensive survey which inventoried surficial cultural resources in the permanent and flood control pools of Cochiti Reservoir had not been completed, and only an estimated 3% of the sites to be affected by the reservoir had been mitigated (Snow 1972:1). In order to correct these deficiencies, the National Park Service, Southwest Division, let three separate contracts to the University of New Mexico, Office of Contract Archeology. These contracts constituted a multiphase research program which was designed first to identify and then to mitigate the loss of cultural resources in the reservoir. These phases included an assessment, two inventory surveys and two programs for mitigation. The present report concerns only the first mitigation phase which focused upon cultural resources in the permanent pool of the reservoir. The assessment and inventory survey phases are reported in the first volume of this series (Biella and Chapman 1977).

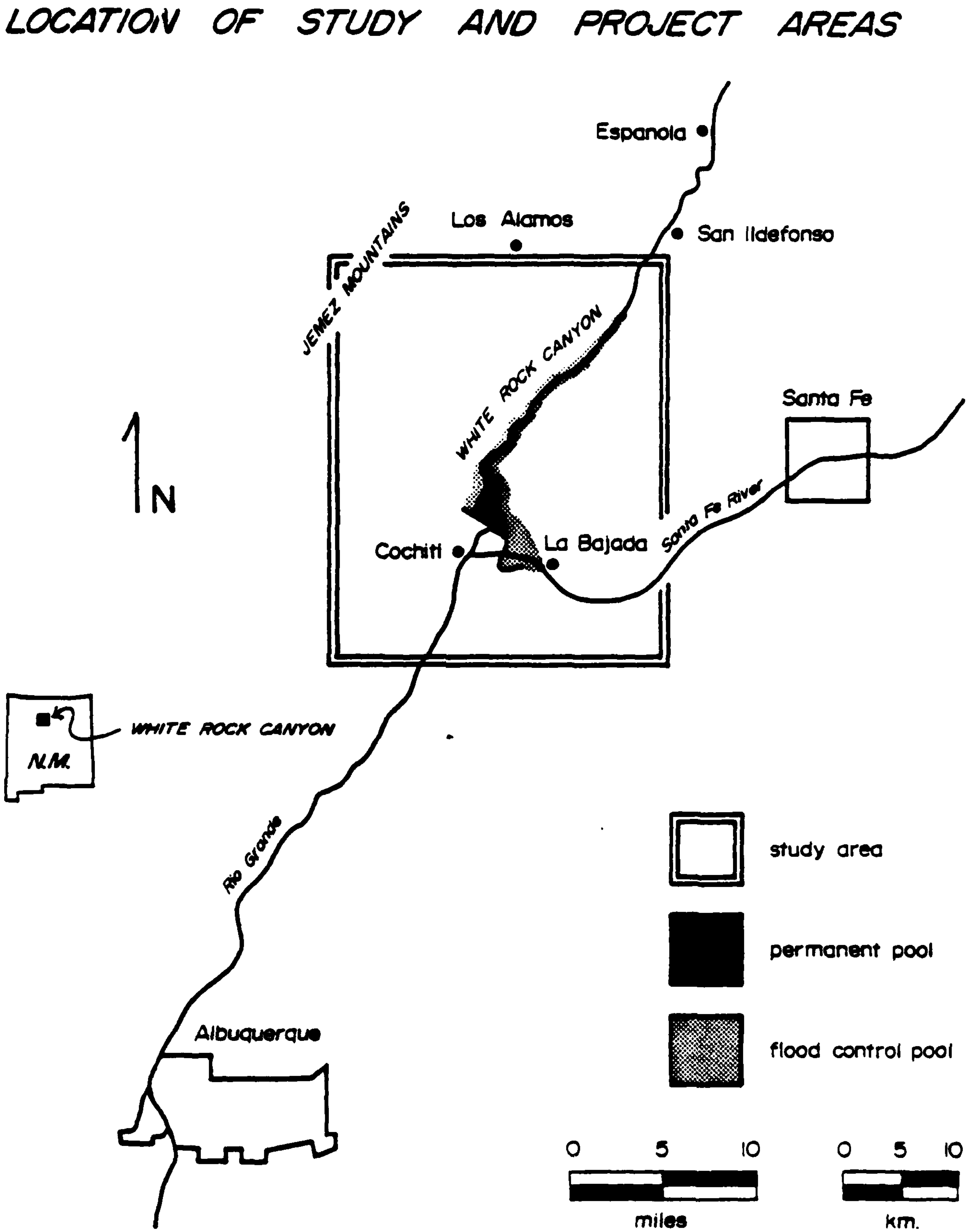


FIG. I.1 Location of Study and Project Areas within New Mexico

PROGRAM FOR MITIGATION OF CULTURAL RESOURCES IN THE PERMANENT POOL OF COCHITI RESERVOIR

Archeological resources are fragile and nonrenewable and may be destroyed by relatively minor disturbances of the ground surface. Federal legislation, which includes the National Historic Preservation Act of 1966 (80 Stat. 915), the National Environmental Policy Act of 1969 (91 Stat. 852), and Executive Order 11593 (36 F.R. 8921), delineates a policy of protection and management of cultural resources for the public domain. In cases where other overriding conditions dictate the destruction of cultural resources, a mitigation program must be developed which guarantees the recovery of information which maximizes the contribution of those resources to current and future archeological research. In accordance with these objectives, a research program was designed to ameliorate the loss of information regarding past human behavior from resources directly impacted by the permanent pool of Cochiti Reservoir.

A primary concern in developing the program was that of specifying a set of research goals which could be employed as general guidelines to direct particular aspects of research throughout the duration of the three year project. It is impossible to design any archeological research program which results in retrieval of *all* useful information concerning past human behavior. In recognition of this fact, contemporary archeological research has placed considerable emphasis upon delineating finite sets of explanatory goals and attendant information needs toward which investigation can be directed. The degree to which such goals and information needs can be warranted as productive or useful must be evaluated in light of their contribution to the development of explanatory principles which account not only for variability observed in the archeological record of past human behavior, but as well for variability in human behavior observable at present.

Because of these concerns, an overt attempt was made during the initial phase of the project to outline a set of concepts which could serve as general guidelines for continuing research. These concepts provide a structure from which specific research problems can be derived. During the course of the project, particular directions of research have, however, undergone varying degrees of successive refinement in an evolving research framework. This volume represents the output of this process with respect to the research goals and information needs potentially retrievable through analysis of data recovered through an investigation of site locations situated within the boundaries of the Cochiti Reservoir permanent pool.

RESEARCH GOALS

The explanatory approach governing the Cochiti Reservoir Archeological Project has focused upon isolating relationships between human cultural behavior and the environment. Previous anthropological research has indicated that cultural behavior may be profitably viewed as adaptive in nature. It has been suggested that processes resulting in cultural change, as well as much social, technological and organizational variability exhibited among cultural systems, may be understood through reference to the interaction between human populations and the environment in which they exist (Steward 1938). Although a number of conceptual frameworks have been suggested to account for cultural-ecological relationships (Steward 1955; White 1959; Binford 1968; Geertz 1971), there exists at present no agreement among researchers as to a single body of concepts or analytical procedures which may be employed to explain the dynamic relationship between human behavior and environmental variability. This research has, however, delineated several realms of inquiry which may be pursued to examine the general problem of cultural-ecological process for purposes of explanation.

Cultural Behavior and Adaptation

One major result of previous anthropological inquiry into the relationship between culture and environment has been a growing concensus that human cultural behavior may be viewed, either wholly or in part, as an extrasomatic means of adaptation to the environment (White 1959), and that the organization of cultural behavior is systemic in nature (Binford 1964; Clarke 1968). In this sense, human cultural behavior has been viewed as a self-organizing system of components through which a human population extracts energy from the environment and circulates it to individual members of the population.

Although the general tenets that cultural behavior may be viewed as a system and functions as an adaptive mechanism are generally agreed upon, discussion concerning how these concepts may be used to account for much observable variability in cultural behavior has not yet resulted in a clearly defined set of explanatory principles. Major conceptual problems in this regard include the way in which both cultural behavior and environmental variability should be stratified into components of a system; the manner in which those components interact in systemic fashion, and definition of processes underlying evolutionary change in the structure and organization of these components. The intent of the Cochiti Reservoir Archeological Project has been to gather information pertinent toward an investigation into aspects of each of these problem areas.

A Stratification into Behavioral Components

Behavioral components of a cultural system may be defined as a set of subsistence related activities through which a human population extracts energy from a variety of food resource species. These activities include the general realms of food resource procurement, processing and consumption. It may be suggested that the articulation of these activities into a system of adaptive behavior is achieved through a set of logistical strategies involving human population movement across the landscape, transportation and storage of food resources, and definable social and economic relationships which pertain between members of a human population. Thus, components of an adaptive system may be viewed as a finite set of subsistence related activities through which a human population extracts, processes and ingests energy from the environment. These activities are organized into a system of behavior through logistical strategies which dictate their time and place of implementation within an environmental context.

This kind of stratification is especially amenable to description of archeological data in that the archeological record of a cultural system is largely comprised of material by-products of subsistence related behavior undertaken at different spatial loci. For example, analysis of an assemblage of lithic debitage may result

FIG. I.2 Typical landscape in White Rock Canyon, approximately 13 kilometers north of Cochiti Dam

FIG. I.3 Typical landscape in the southern portion of Cochiti Reservoir

in definition of techniques of stone tool manufacture and categories of tool usage which provide information about procurement or processing activities. Similarly, analysis of faunal or floral remains may result in identification of species which were being procured, processed or ingested at a site location.

When components of an adaptive system are viewed as a set of subsistence related activities, the relevant environmental content of an area or region may be defined as two general realms of variability. These are technological resources which include all materials from which tools and facilities are manufactured by a human population, and food resources which include all species which constitute sources of ingested energy to maintain the physical viability of a human population. These two resource categories are not mutually exclusive in that some food resource species may also provide technological resources in the form of bone, antler, hide, etc. for tool and facility manufacture.

The distribution of different food resource species within a region cannot be treated as static or finite either spatially or temporally. Spatial distribution of floral food resource species is largely determined by soil types, landforms, elevational gradients and climatological cycles. Their productivity varies considerably through seasonal, annual and multiyear cycles. Spatial distributions and productivity of more mobile faunal food resource species exhibit similar periodicity through seasonal and annual cycles.

This kind of temporal periodicity in productivity and spatial distribution of food resource species within a region must be coped with by a human population through the operation of logistical strategies concerning human population movement, food resource transportation, food resource storage and social relations governing labor organization and redistribution of food resources among members of the population. The finite distribution of nonliving technological resources, including materials suitable for manufacture of tools and facilities essential to the pursuit of subsistence related activities, constitutes another set of parameters which must be dealt with logistically.

It is thus clear that the articulation of a human population with an environment may be specified at two levels of adaptive behavior. The first of these is at the level of subsistence related activities resulting directly in energy extraction and ingestion through procurement, processing and consumption of food resources. Such behavior necessitates employment of an ancillary set of activities for manufacture of tools and facilities required in these subsistence related pursuits. The second level of articulation is found in the logistical strategies through which subsistence related activities are scheduled temporally and spatially within the environment to cope with variability in distribution, periodicity and productivity of food resource species, and distribution of technological resources. Included in this logistical organization are social mechanisms governing the redistribution of resources to individual members of the human population.

With respect to these research goals, the intent at this stage of the research has been to focus upon developing analytical techniques which would permit the isolation of different procurement, processing and consumption activities performed at site locations in the permanent pool of Cochiti Reservoir. Although data were gathered which provide information about the logistical strategies of the various adaptive systems represented in the reservoir, an emphasis in this volume has been placed upon providing descriptive summaries of intrasite variability. An ultimate goal of the research, however, will be to address problems of intersite variability and to delineate the logistical strategies through which subsistence related activities are organized into a system of adaptive behavior.

SUMMARY OF SURVEYED SITES PERMANENT POOL OF COCHITI RESERVOIR

A total of 102 sites were located on the survey of the permanent pool of Cochiti Reservoir. Three different temporal periods of occupation were represented: Late Archaic, ca. 800 B.C. to A.D. 400 (Irwin-Williams 1973); Anasazi, ca. A.D. 600 to 1600 (Wendorf 1954), and Historic, ca. A.D. 1540 to present (Abbink and Stein 1977). Regardless of period, a majority of the site locations appear to represent small procurement, production or consumption locales. Classes of sites included nonstructural lithic or lithic and ceramic scatters, small structural sites (generally ranging from one to three rooms), depressions, terraces, corrals, pens and petroglyphs. One 12 to 17 room pueblo was also recorded.

Nonstructural Lithic or Lithic and Ceramic Scatters

Thirty-two site locations were characterized by lithic or lithic and ceramic scatters. Proveniences† from 23 sites exhibited hearth features and/or evidence of hearth usage in the form of firecracked rock scatters. The majority of these were single hearth site locations, although one site exhibited five separate hearth areas. Lithic assemblages were characterized by evidence of tool manufacture in the form of unutilized debitage, cores and occasional hammerstones, and by evidence of tool use in the form of utilized debitage, retouched debitage, occasional projectile points and biface fragments. Manos, metates and other milling implements occurred infrequently. Ceramic fragments were recorded on seven sites with hearth features.

Proveniences from thirteen different site locations were characterized solely by the presence of lithic or lithic and ceramic debris. Samples of lithic artifacts from these proveniences indicated that both tool manufacture and tool usage activities had been undertaken. Milling implements occurred infrequently, and only four of these proveniences exhibited ceramics.

The assignation of these proveniences to one or more temporal periods of occupation was a difficult problem. Although lithic artifacts from several proveniences suggested deposition during the Late Archaic Period, and other lithic and/or ceramic artifacts suggested a reuse or deposition during one or more phases of Anasazi Period, the frequency of diagnostic artifacts for most provenience locales was too low to permit assignation to a finite temporal period. Proveniences from only three site locations, LA 12454, LA 12482 and LA 12483, were assigned to the Anasazi Period based upon frequencies of ceramic artifacts. No proveniences were

† Proveniences are discrete spatial loci within a site location (see Chapman and Enloe 1977)

TABLE 1.1

NONSTRUCTURAL LITHIC OR LITHIC AND CERAMIC SCATTERS WITH HEARTH FEATURES OR FIRECRACKED ROCK SCATTERS

Site No.	Prov. No.	No. Ceramics	Site No.	Prov. No.	No. Ceramics
LA 12436	1	0	LA 12460 (con't)	3	0
LA 12439	1	0		4	0
LA 12444	1*	0		5	0
LA 12445	1	0	LA 12463	1*	0
LA 12446	1	4	LA 12481	2	0
LA 12447	2*	0		3	0
LA 12448	1*	2	LA 12482	1	9
	2*	0	LA 12483	1*	15
LA 12455	1	0	LA 12486	1*	4
	2	0	LA 12494	1*	0
LA 12456	1*	0	LA 12495	1*	0
	2*	0	LA 12496	1*	3
	3*	0	LA 12499	1	0
	4*	0	LA 12502	1	0
LA 12459	1	0	LA 12503	1	1
LA 12460	1	0	LA 12521	1	0
	2	0		2	0

*Proveniences which were excavated or tested

TABLE 1.2

NONSTRUCTURAL LITHIC OR LITHIC AND CERAMIC SCATTERS WITHOUT EVIDENCE OF HEARTH FEATURES

Site No.	Prov. No.	No. Ceramics	Site No.	Prov. No.	No. Ceramics
LA 10111	2	0	LA 12478	1	0
LA 12442	1*	0	LA 12479	1	0
LA 12448	3*	0	LA 12481	1	2
LA 12450	1	0	LA 12490	1	0
LA 12454	2	6	LA 12491	2	2
LA 12468	1*	0	LA 12499	2	0
	2*	0	LA '517	2	0

*Proveniences which were excavated or tested

definitively assigned to the Archaic Period; rather, they were assigned to a Lithic Unknown Period.

Structural Anasazi Period Site Locations

A total of 37 proveniences from 31 site locations were assigned to the Anasazi Period. Three of these were nonstructural site locations mentioned in the previous discussion. The remaining proveniences were characterized by architectural remains including room and rubble features, terraces or shelters.

1. Early Developmental (Basketmaker III or Pueblo I) (A.D. 600-900)

No components dating to these phases were documented during the survey of the permanent pool of Cochiti Reservoir.

2. Late Developmental (Pueblo II) (A.D. 900-1200)

Although P-II sites have been located in the vicinity of the reservoir (Snow 1973b), none were documented in the permanent pool.

3. Coalition (Pueblo III) (A.D. 1200-1325)

Three single component P-III site locations were recorded in the permanent pool of Cochiti Reservoir. One site location exhibited a single room; another exhibited two or three possible rooms, and the third represented a medium-sized pueblo consisting of an estimated 17 to 21 rooms. Both lithic and ceramic artifactual debris were noted for all of these proveniences. The lithic assemblages were characterized by both tool use and manufacture. Milling implements were not recorded for any of these site locations. The ceramic assemblages were generally characterized by larger frequencies of painted wares than utility wares.

4. Classic (Pueblo IV) (A.D. 1325-1600)

Fourteen proveniences within 12 single component structural P-IV site locations were recorded within the boundaries of the permanent pool of Cochiti Reservoir. Nine were single room site locations; three proveniences exhibited two-room structures and the number of rooms for two proveniences could not be determined. Lithic assemblages from these site locations indicated both tool use and tool manufacturing activities. Milling implements were only recorded for one of the proveniences. Ceramics were characterized by greater frequencies of painted wares than utility wares.

5. Multicomponent P-III/P-IV

Four multicomponent P-III/P-IV site locations were recorded during survey. These sites were characterized by between two and three surface rooms each. One site, LA 12522, also exhibited a kiva or pithouse depression. The lithic and ceramic assemblages were similar to single component P-III and P-IV site locations.

6. Multicomponent P-IV/P-V

Three multicomponent P-IV/P-V site locations were recorded during survey. The P-V or "Historic Pueblo" phase roughly corresponds to the Colonial phase discussed below. Two of these sites were single structures, and the third exhibited two rooms. The lithic and ceramic assemblages were similar in character to other Anasazi Period site locations.

TABLE 1.3

STRUCTURAL ANASAZI PROVENIENCES

Site No.	Prov. No.	Description
P-III		
LA 5012	1	2-3 rooms
LA 5014	1*	12-17 rooms
LA 5015	1	1 room
P-III/P-IV		
LA 5011	1	2-3 rooms
LA 12440	1	2 rooms
LA 12511	1*	3 rooms
LA 12522	1*	3 rooms, 1 depression
P-IV		
LA 5013	1*	1 room
LA 12438	1*	1 room
LA 12443	1*	1 room
LA 12447	1*	1 room
LA 12452	2	2 rooms
LA 12461	1	rubble
	2	rubble
LA 12470	1	1 structure
LA 12512	1*	1 room
LA 12513	1	1 room
LA 12514	1	2 rooms
	2	2 rooms
LA 12517	1*	1 room
LA 12519	1*	1 room
P-IV/P-V		
LA 12161	1*	1 room
LA 12454	1*	2 rooms
LA 12469	1	1 room

*Proveniences which were excavated or tested.

7. Anasazi Period Site Locations, Phase Unknown

In absence of datable artifacts, ten site locations were tentatively assigned to the Anasazi Period based upon structural similarities with datable Anasazi site locations. These sites could not be assigned to a specific phase. Four sites were characterized by surface structures ranging from one to three rooms, and two exhibited isolated walls which might represent badly eroded structures. One provenience consisted of 10,000 sq. meters of agricultural grids or terraces, and another two proveniences were Anasazi petroglyphs. The composition of lithic assemblages, where present within these proveniences, were similar to that of datable Anasazi sites. Ceramics, however, occurred infrequently.

TABLE 1.4

ANASAZI(?) PROVENIENCES

Site No.	Prov. No.	Description
LA 12161	2	Petroglyph
LA 12451	1	2 rooms
LA 12461	3	Grids or terraces
LA 12462	1	1 room
LA 12517	3	Petroglyph
	4	Isolated wall
LA 12518	1*	Isolated wall
LA 12510	1	1 room

*Proveniences which were excavated or tested

Historic Period Site Locations

Forty-one site locations exhibited components which dated to one or more phases of the Historic Period. These sites exhibited a range of habitation structures, corrals or pens, trash scatters and isolated hearth features.

1. Exploration Phase (A.D. 1540-1598)

No sites which date to the early Spanish contact phase were recorded during the survey of the permanent pool.

2. Colonization Phase (A.D. 1598-1680)

No Colonization phase components were documented during the survey of the permanent pool, although two such site locations, LA 591 and LA 6178, were excavated during the course of the Cochiti Dam Archeological Salvage Project conducted by the Museum of New Mexico (Snow 1973a, 1973c).

3. Pueblo Revolt Phase (A.D. 1680-1692)

In the general Cochiti Study Area, a large pueblo, LA 295, was constructed and occupied during the Pueblo Revolt phase (Wissler 1915). None of the sites located in the reservoir, however, exhibited components which dated to this phase.

4. Colonial Phase (A.D. 1692-1821)

Seven single component site locations and three multicomponent P-IV/Colonial phase site locations were recorded which dated to the Colonial phase. These sites were similar in composition, generally exhibiting between one and two habitation structures. Three of the sites, LA 9138, LA 10110 and LA 10111, were enclosed, in part, by an extensive network of low walls. From the type of ceramic vessels present, a majority of these sites appeared to date from the middle to late 18th century.

TABLE 1.5

HISTORIC PROVENIENCES
Colonial Phase/18th century/P-V

Site No.	Prov. No.	Description
LA 9138	1*	2 rooms
	2*	2 rooms
	3*	1 room
	6*	2 rooms
LA 9139	1*	1 room
LA 10110	1*	2 rooms
LA 12160	1	1 room
LA 12452	1	1-4 rooms
LA 12466	2	1 room
LA 12507	1*	1 room

* Proveniences which were excavated or tested

5. Mexican Phase (A.D. 1821-1846)

None of the sites recorded during the survey of the permanent pool could be definitely assigned to this phase.

6. Territorial Phase (A.D 1846-1912) and early Statehood Phase (pre-World War II)

Proveniences from twelve site locations dated between the late 19th and early 20th centuries. These sites were characterized by considerable variability in structural and artifactual composition. They included tin can and glass scatters, single habitation rooms, corrals, and isolated walls. One site consisted of a pumphouse built at the edge of the Rio Grande with a metal pipe line which led from the structure to the mesa top behind the site, and another was manifest as a road cut.

7. Statehood (post-World War II)

Twelve site exhibited components which postdated the Second World War. With the exception of one provenience which consisted of a tent base and another which exhibited a lean-to and cairn, all of the modern proveniences were characterized by one or two hearth areas and a minimal amount of industrial metal or glass debris. These modern campsites were constructed generally within 20 meters of the Rio Grande River. Two

were deposited as a function of the Museum of New Mexico's excavations of LA 70 and LA 9139 in 1964 and 1965. An additional nine hearths of recent construction and usage were documented as isolated occurrences.

TABLE 1.6

HISTORIC PROVENIENCES
Territorial Phase/late 19th to early 20th centuries

Site No.	Prov. No.	Description
LA 10110	6	Road cut
LA 10111	1	1 room
LA 12434	1	Artifactual scatter
LA 12449	1*	1 room, 2 corrals
LA 12453	1	2 room, piston engine
LA 12458	1	Artifactual scatter
LA 12472	1	2 hearths, artifact scatter
	3	Artifact scatter
LA 12474	1	Isolated wall
LA 12485	1	Sheep pen
LA 12488	1	1 structure
LA 12489	1	1 structure
LA 12500	1	Firecracked rock-artifact scatter
	2	Artifact scatter

*Proveniences which were excavated or tested

8. Historic Period, Phase Unknown

A total of 15 site locations exhibited components which were assigned to the Historic Period based upon similarity to datable Historic Period sites. These proveniences generally consisted of masonry structures, both habitation units and corrals. A few were characterized by isolated walls or historic petroglyphs. Little artifactual debris was associated with these structures.

Unknown Period Site Locations

Nineteen proveniences from 15 site locations could not be assigned to either a temporal period or phase. In general these sites lacked artifactual debris. Eight proveniences exhibited isolated rooms; one provenience consisted of a probable depression feature; five other proveniences were petroglyphs of an indeterminant age; another provenience consisted of a shelter which was encircled by a low wall, and the last provenience consisted of two features which might have represented hearth activities.

TABLE 1.7

HISTORIC PROVENIENCES
Statehood Phase/Modern/Post World War II

Site No.	Prov. No.	Description
LA 10110	2	1 hearth
	3	1 hearth
	4	1 hearth
LA 12435	1	2 hearths
LA 12437	1	Lean-to, cairn
LA 12472	2	1 hearth
	4	1 hearth
LA 12473	1	1 hearth
LA 12474	1	1 hearth
LA 12475	1	1 hearth
LA 12476	1	1 hearth
LA 12477	1	1 hearth
	2	1 hearth
	3	Tent base
LA 12484	1	1 hearth
LA 12487	1	2 hearths
LA 12493	1	1 hearth

SELECTION OF SITES FOR MITIGATION

The majority of the sites located within the boundaries of the permanent pool of Cochiti Reservoir are small procurement, production and/or consumption locales. Although these site locations were deposited as a consequence of at least three major periods and strategies of adaptation (Archaic, Anasazi and Historic), they reflect a patterning of short-term and apparent seasonal occupation. Only a few sites, notably LA 9138, LA 12161 and LA 5014, suggest a longer, perhaps year-round occupation.

This overall similarity in human utilization of the permanent pool area is distinctive from the character of adaptation indicated by previous research in the Cochiti Study Area (Biella and Chapman 1975, 1977; Dickson 1975; Ellis 1967; Flynn and Judge 1973; Hewett 1905, 1953; Kidder 1924; Lange 1959, 1968; McGregor 1965; Reed 1949; Wendorf 1954; Wendorf and Reed 1955). As such, the cultural resources within the permanent pool offer an unusual research potential for an examination into the role(s) of short-term, seasonal occupations for understanding strategies of different systems of human adaptation in the Middle Rio Grande region through time.

TABLE 1.8

HISTORIC OR HISTORIC(?) PROVENIENCES

Site No.	Prov. No.	Description	Site No.	Prov. No.	Description
LA 10110	5	Isolated wall	LA 12466	1	1 room
LA 10111	3	2 corrals		3	Rubble
	4	1 corral	LA 12467	1	Isolated wall
	5	1 corral		2	Isolated wall
LA 12459	2	1 corral, firecracked rock	LA 12471	1	2 rooms
LA 12465	1	Petroglyph	LA 12489	2	Petroglyph
	2	2 rooms	LA 12504	1	2-3 corrals
	3	1 room	LA 12505	1	1 structure
	4*	1 room, isolated wall	LA 12506	1	Isolated wall
	5	2 rooms	LA 12508	1	1 room, 1 corral, isolated wall
	6	1 corral, isolated wall	LA 12523	2	1 corral, petroglyph
	7	Petroglyph	LA 12524	1*	5 rooms
	8	1 room	LA 12525	1	2 rooms, petroglyph
	9	1 room			

*Proveniences which were excavated or tested

TABLE 1.9

UNKNOWN PERIOD PROVENIENCES

Site No.	Prov. No	Description	Site No.	Prov. No.	Description
LA 9138	4*	1 room	LA 12485	2	Petroglyph
	5*	1 room	LA 12491	1	Petroglyph
LA 10111	6	Petroglyph	LA 12492	1	1 room
LA 12441	1	2 possible hearths	LA 12497	1	1 room
LA 12457	1	Shelter enclosed by wall	LA 12498	1	1 room
	2	Petroglyph	LA 12501	1	1 room
LA 12464	1	1 room	LA 12509	2	1 room
LA 12472	5	Isolated wall	LA 12515	1*	1 depression
	6	Petroglyph	LA 12516	1	1 room
	7	Isolated wall			

*Proveniences which were excavated or tested

In particular, investigation of a sample of sites in the reservoir will permit the isolation of variability among the kinds of subsistence related activities engaged in at site locations within a restricted environmental context, White Rock Canyon. These site locations further have the potential to provide information about the nature of logistical strategies through which those activities were articulated into different regional systems of adaptive behavior.

These kinds of information are especially critical in understanding processes underlying change through time in adaptive systems, and constitute an entire realm of cultural variability within the Middle Rio Grande region which is unknown at present. While previous research has focused upon examining the large, permanently inhabited settlements, little attention has been directed toward an investigation into the strategies of settlement or land and resource utilization through time from the perspective of small, seasonally occupied site locations. Analysis of sites in the permanent pool of Cochiti Reservoir can thus provide a potentially significant contribution to Middle Rio Grande archeology with respect to several problem areas concerning explanation of regional adaptive strategies undertaken by human populations in the past.

Stratification into Different Site Classes

Traditionally, Archaic and Historic Period site locations have not been examined in detail as part of archeological investigation within the Middle Rio Grande region. Although sites from both periods have been recorded, neither survey nor excavation data recovered during the past 100 years of anthropological research have treated these classes of sites systematically. The vast majority of Archaic sites, for example, have been recorded since 1970 (Snow 1972, 1973b; Flynn and Judge 1973; Biella and Chapman 1975, 1977). Similarly, a few 16th, 17th and 18th century Historic Period site locations have been examined (Wissler 1915; Snow 1971, 1973a, 1973c), but 19th and 20th century sites have often been ignored (Biella 1977). Although Anasazi Period site locations have received more systematic attention, the past research in the Cochiti Study Area has overlooked most small structural and nonstructural site locations (Hewett 1905, 1953; Lange 1968).

At the outset of the mitigation phase, then, it was evident that despite the long history of anthropological research in the general area, the classes of sites documented in the permanent pool of Cochiti Reservoir were poorly represented in the previous archeological research within the Middle Rio Grande region. It was imperative that a mitigation program be developed which examined small structural and nonstructural site locations from the different temporal periods of occupation with equal emphasis. For this reason, proveniences of sites were initially stratified into different temporal periods: probable Archaic (Lithic Unknown), Anasazi; Historic, and Unknown. Variability among proveniences within each of these temporal periods was then examined and served further to stratify the survey sites. Figure 1.4 provides a breakdown of this process of stratification.

The intent of the stratification into site classes was to isolate differences in the kind, structure and organization of activities performed within the boundaries of the permanent pool for the Archaic, Anasazi and Historic Periods of adaptation. The presence or absence of features, the number of structures, and the artifactual assemblages from the site locations were employed as the basis for creating site classes. The form this stratification took differed between the major temporal periods and will be reviewed below.

1. Nonstructural Lithic Unknown/probable Archaic Site Locations

Variability among site locations which date to the Archaic Period is virtually unknown in the Middle Rio Grande area. In order to maximize the recovery of information which could be employed to isolate different activities for possible Archaic site locations in the reservoir, the nonstructural sites were stratified into two populations: sites exhibiting hearth features or fire-cracked rock scatters, and sites without surficial evidence of hearth features which were characterized by artifact scatters alone. A sample of each was selected for mitigation. A secondary stratification within those two populations was based upon the presence or absence of ceramic artifacts.

2. Anasazi Site Locations

Previous research has resulted in a well-defined chronology for the Anasazi occupation in the Middle Rio Grande area. Consequently, Anasazi sites from the reservoir were stratified into single component P-III and P-IV subclasses and multicomponent P-III/P-IV and P-IV/P-V subclasses. Anasazi sites which could not be dated to a phase formed a fifth subclass. A sample of each of these subclasses was selected for mitigation. An ancillary criterion for selecting particular site locations within a phase was based upon the number of surface and subsurface structures present; when several sites within a phase were to be excavated, an attempt was made to select sites with different numbers of structures.

3. Historic Site Locations

Historic sites were subdivided into temporal classes, including Colonial, Territorial and Statehood phases, in addition to a residual class of historic sites which could not be dated to phase. At the outset of the mitigation phase, one subclass, recent Statehood (post-World War II), was deleted from the sample of sites to be mitigated. This class of sites largely consisted of modern campsites which were characterized by one or two hearth areas with metal and/or glass debris. Since the hearth features and the character of trash were described in detail during the survey phase, it was felt that little additional information could be derived through excavation. During the course of the excavation of other sites, however, one modern hearth and a recent trash pit were described (see LA 12456, Provenience 1 and LA 12483, Provenience 1). Samples from the remaining subclasses were then made, although an emphasis was placed upon the 18th century, Colonial phase site locations.

Size of Sample

An attempt was made to select a sample large enough to reflect patterning in the structure and organization of activities performed at the different kinds of site locations within the permanent pool area. The exact size of the sample, however, was dictated by the amount of time available after the survey phase prior to inundation. It was estimated from survey observations that between 30% and 40% of all site locations could be excavated in the amount of time available. An attempt was made

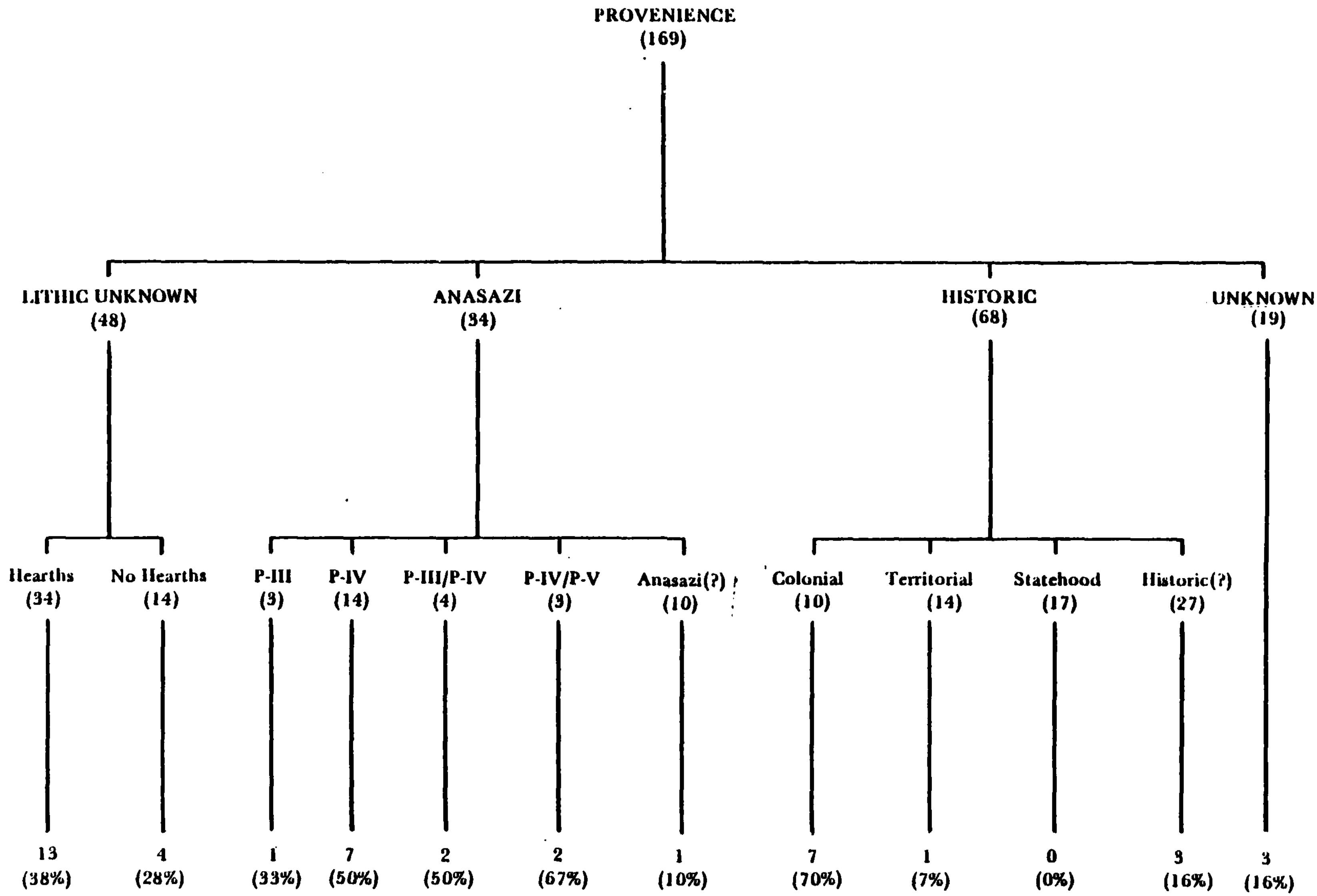


FIG. 1.4 Stratification of Proveniences into Different Classes (with the frequency and percentage of proveniences sampled for each class at the bottom of the figure)

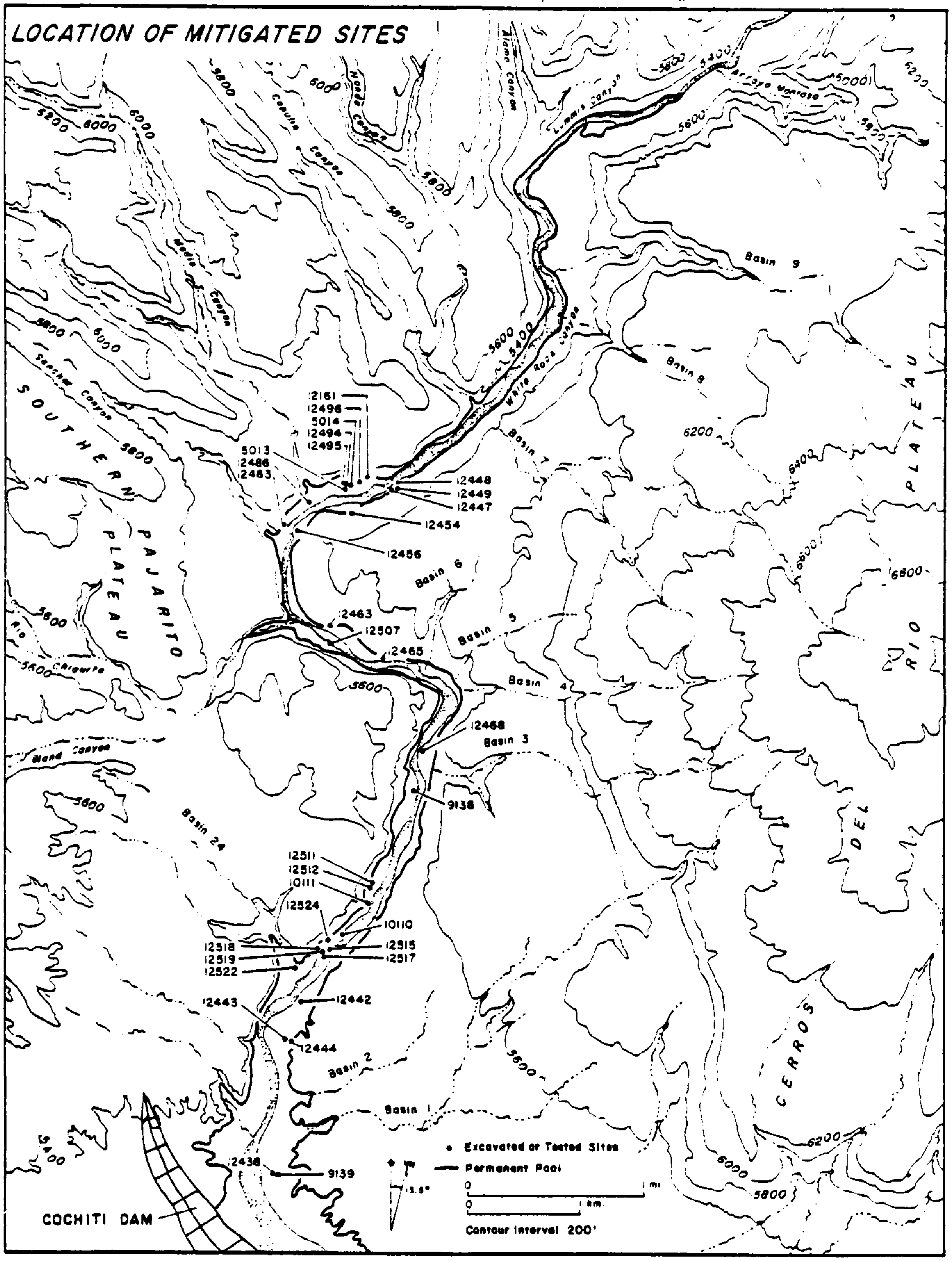


FIG. 1.5 Location of Mitigated Sites in the Permanent Pool of Cochiti Reservoir

TABLE 1.10

SITES SELECTED FOR INVESTIGATION

Site No.	Late Archaic(?)	Anasazi	Historic	Unknown
5013		x		
5014		x		
9138*			x	x
9139			x	
10110			x	
10111			x	
12161*		x	x	
12438*		x		
12442	x			
12443		x		
12444	x			
12447	x	x		
12448	x			
12449			x	
12454		x		
12456	x			
12463	x			
12465			x	
12468	x			
12483		x		
12486	x			
12494	x			
12495	x			
12496	x			
12507			x	
12511		x		
12512		x		
12515				x
12517		x		
12518		x		
12519		x		
12522		x		
12524			x	

*After excavation these sites were found to date to different periods or phases. See the site reports in Sections II and III.

to select at least 30% of the site locations dating to each temporal period for excavation.

Another concern in designing the sampling strategy was directly related to the overall research goals of the project. A major objective in this regard was that of differentiating the kinds of subsistence related activities which had been undertaken within specific site locations. It was felt that this goal could best be achieved through excavation of entire site locations rather than excavation of portions of site locations. For this reason no overt attempt was made to design strategies through which site locations could be sampled through excavation; attention, rather, was directed toward selection of specific site locations which could be completely or nearly completely excavated. Exceptions to this strategy were "test" excavations. These excavations were generally restricted to site locations or proveniences of sites which had presented problems in temporal classification from survey information.

INTRODUCTION TO THE VOLUME

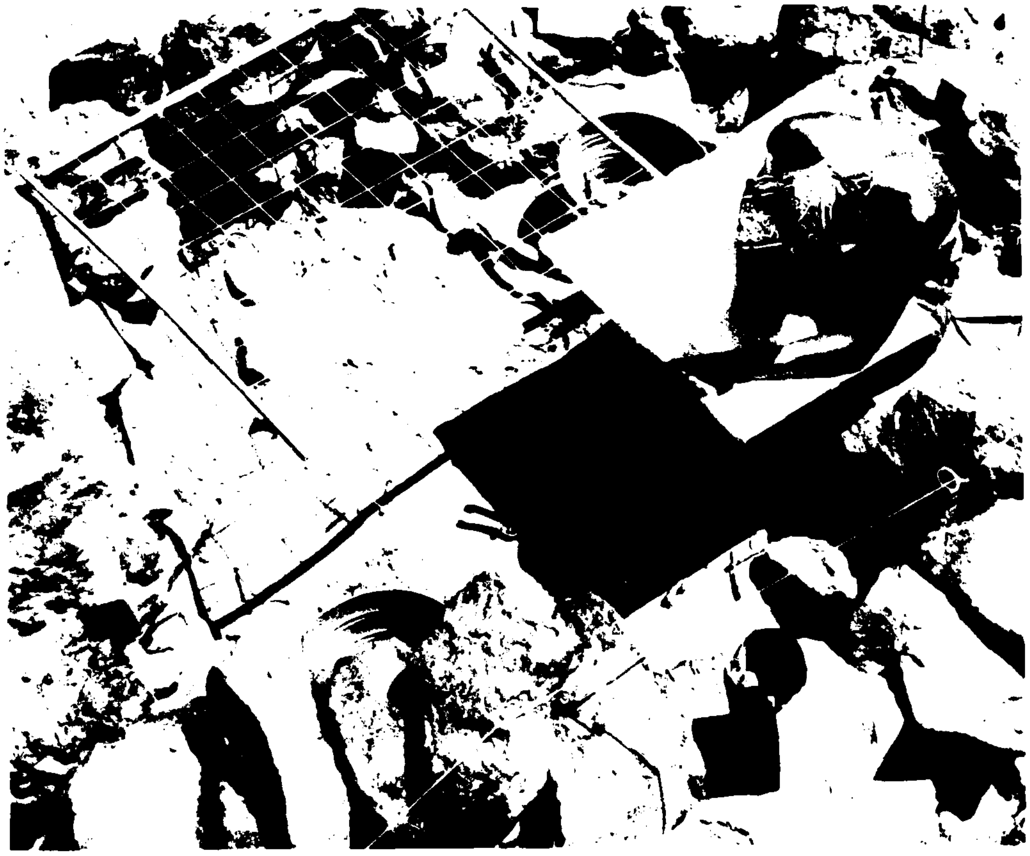
In the following two sections and appendices, the results of the mitigation program in the permanent pool of Cochiti Reservoir are presented. The emphasis in this volume has been upon a presentation of data.

Due to the magnitude of the project and the limited amount of time available prior to inundation, a portion of the mitigation work was subcontracted to the Cultural Resources Management Division of the Department of Anthropology, New Mexico State University. NMSU concentrated upon Anasazi Period site locations, in particular those exhibiting P-III components, although they also excavated a single component P-IV site and a P-V (?) site. The Office of Contract Archeology concentrated upon Archaic and Historic Period site locations, although one P-III site and several Anasazi P-IV sites were also excavated.

Analyses of the data retrieved through the mitigation program were conducted respectively in Las Cruces and Albuquerque. Although an attempt was made to render these analyses comparable, they differed in some respects. Consequently, the results of the research conducted by each institution are presented in separate sections of this volume. The sites excavated by NMSU are presented in Section II with the site reports being preceded by a discussion of the analyses conducted. The sites excavated by OCA are presented in Section III and are preceded by a series of chapters which describe the lithic, ceramic, faunal and obsidian hydration analyses conducted.

SECTION II: EXCAVATION OF FIVE SITES IN WHITE ROCK CANYON

STANLEY D. BUSSEY
EDITOR



PREFACE

In January of 1975, the Cultural Resources Management Division of New Mexico State University engaged in a cooperative project with the Office of Contract Archeology, University of New Mexico. The project involved an assessment survey of cultural resources in the permanent pool of Cochiti Reservoir and the excavation of selected sites.

Excavation began in March, 1975. Field work was carried out by archeologists from New Mexico State University and the University of New Mexico. Karl W. Laumbach and Billy J. Naylor were site supervisors for the archeological team from New Mexico State University. Excavation procedures and architectural descriptions were submitted by Karl W. Laumbach (LA 5014, LA 12511), Billy J. Naylor (LA 12512, LA 12522) and Shirley A. Rorex (LA 5013).

Laboratory analysis was directed by Toni Sudar-Murphy. She was assisted by Dabney A. Ford who conducted the flotation analysis and drafted the original plates and maps. Karl W. Laumbach directed the lithic analysis.

We wish to thank Dr. Volney W. Howard Jr., Animal Science Department, NMSU; Dr. Russell E. Clemons and Dr. William R. Seager, Department of Earth Sciences, NMSU; Donald P. Murphy, Department of Mathematics, NMSU; Dr. William A. Dick-Peddie, Department of Biology, NMSU; Dr. Boyce C. Williams, Department of Agronomy, NMSU; D. Beth Bussey, Department of Anthropology, NMSU; Terry Turner, State Seed Analyst, New Mexico Department of Agriculture, and Phillip Shelley of Washington State University. We also wish to express our gratitude to Dr. Stanley D. Bussey whose confidence and support was overwhelming.

Karl W. Laumbach
Toni Sudar-Murphy

Las Cruces, N.M.
June 1977

Chapter 2
Analyses of Ceramic, Lithic, Bone and Flotation Materials

TONI SUDAR-MURPHY and KARL W. LAUMBACH with DABNEY A. FORD

METHODOLOGY AND CERAMIC DESCRIPTIONS

Overview

Paint-decorated pottery, along with utility ware in its seemingly infinite plain and textured varieties, has long been the focus of archeological analysis and inference in the American Southwest. Ceramics have facilitated population movement studies and provided insight for intra-site observations, including both stratigraphic analysis studies of patterned functional and behavioral processes through time.

During the analysis of the ceramics associated with the five prehistoric sites located in White Rock Canyon, it was found that the published literature affords scanty information for the limited number of Coalition Period (A.D. 1250-1325) sites.

For comparative purposes, several studies of Coalition Period ceramics were reviewed. In our opinion, H. P. Mera's sketchy but informative publication *Ceramic Clues to the Prehistory of North Central New Mexico* (1935) has been and is still one of the more enlightened overviews for the region. Although some of his descriptions lack contemporaneity, his observations of population movements and associated ceramics will continue to serve as a base for scientific study. Stubbs and Stallings (1953), Kidder and Amsden (1931), Kidder and Shepard (1936) and Hawley (1936) proved to be among the most useful sources on sites or materials associated with the Coalition Period. *The Cochiti Dam Archaeological Salvage Project* assembled by Charles H. Lange (1968) has provided the most current published data for the period (LA 6462, North Bank Site). Kenneth Honea's observation of sherds from LA 6462 deserves some comment, particularly his suggestions for naming several new pottery type varieties based on subtle and external technical attributes.

A brief review of the current information known for the Upper Rio Grande towards the latter part of the 12th century shows the local production of a mineral paint, white-slipped pottery, as the result of an eastward expansion of peoples and influence, directly or indirectly, from the Chaco District. With time, diversion from the Chacoan II style occurs, particularly in the degeneration of craftsmanship and the tendency towards either thinner slips or their total absence. At present, the one exception to this apathetic attitude toward slipping is to be found in the Taos area, where potters continued slipping their pottery in the Chacoan manner (Mera 1935, see Taos Black-on-White).

South of this region, in the vicinity of Santa Fe and ranging east toward Pecos and west to the Rio Puerco, a thin washed or unslipped variety has been recognized and named Kwahe'e Black-on-White (Mera 1935). At present, very little is known about Kwahe'e Black-on-White as it manifests itself in several variations with notable differences in temper selection and surface treatment. Most accounts deal with this type in an indirect manner or paraphrase Mera's 1935 description.

At the Forked Lightening Ruin, Shepard reports a sherd tempered, white-slipped, mineral painted pottery occurring in the earliest levels. She states that "small sites containing pottery similar in surface characteristics to Chaco Pueblo II are known in the area" (Kidder and Shepard 1936:484). She does not elaborate other than to suggest this mineral paint pottery's influence upon the development of the carbon paint pottery which is discussed below.

Most recently, Kenneth Honea, in his analysis of ceramics taken from the earliest component at LA 6462 (Honea 1968:118-120), split what he identified as Kwahe'e Black-on-White on the basis of surface color and surface treatment. Based on these external characteristics, he has named two new types: Borrego Black-on-White and Cholla Black-on-White. Honea also suggests the derivation of Kwahe'e Black-on-White to be, in part, from a "San Juan Anasazi" tradition, citing rock temper and Mesa Verdean design concepts as important indicators.

Unfortunately, too little is known about Kwahe'e pithouse settlements and the associated ceramics for the Upper Rio Grande Valley or any other region. Further excavation is needed in order to supplement the present inadequate data.

Shortly after the beginning of the 13th century, carbon paint pottery emerged. This may be the result of people gradually moving from the Gobernador/Largo regions into the Rio Puerco drainage, blending with and influencing the local makers of Kwahe'e Black-on-White (or the local Chacoan II pottery). This new carbon painted pottery, Santa Fe Black-on-White (Mera 1935; Shepard 1936; Amsden 1931) encompasses a variety of styles with a notable lack of standardization. Inconsistencies are to be found in the color and thickness of the slip as well as in temper selection. Some attempt has been made to interpret these color and temper differences as temporal and regional variations. The results of such efforts are still inconclusive. The most recent work along such lines is that of Kenneth Honea using the ceramics excavated at LA 6461 and LA 6462, both from the 1963 season of the Cochiti Dam Salvage Project (Honea 1968). With stratigraphic isolation, slip color (whitewash, white slip, blue grey slip, or float) and design motifs as variables, Honea (1968:123) has recognized three distinct varieties of Santa Fe Black-on-White and has "revised" chronological sequences for these varieties.

Honea states that these new varieties "evidently correspond to Mera's transition types" (Honea 1968:116). Mera does not describe any transitional types for this

period, nor does he propose a sequence for these varieties (Mera 1935:11-14). Mera has simply reiterated Amsden's (1931) observations of a "blue-grey type" and a sub-type "white-wash slip ware" and has suggested that both types be called Santa Fe Black-on-White, since technically they are the same in appearance although he recognizes variation in paste attributes. In many respects, Mera offers one of the most logical comments concerning the white slipped/washed variety which he attributes to "the survival of a style from the preceding ceramic horizon" (Mera 1935:14). If the local Chacoan II, white wash/slip pottery, is a progenitor of Santa Fe Black-on-White, certainly some potters would have held to the "old way" even under the influence of new and, perhaps, better ideas. This may also explain the distribution of these varieties. The white slipped/washed variety has been found stratigraphically lower than the blue-grey type, but more often they are intermixed at the same levels with no distinguishable time differences between them. Stubbs and Stallings (1953:48) have stated that "there is no apparent time difference between the two (Amsden's blue-grey type and sub-type white-wash slip ware) at Pindi." Similarly at Forked Lightening Ruin, Shepard reports a lack of appreciable temporal significance between stratigraphically isolated occurrences of white washed or slipped and blue-grey slipped or floated sherds. As a matter of fact, she lumps all of them under Amsden's descriptive term, "blue-grey type." She did find, however, meaningful chronological differences among temper types (Honea does not mention this) with sherd temper occurring as the earliest (Shepard 1931: 461).

Could this also be a holdover from an earlier ceramic tradition in light of Santa Fe Black-on-White partial derivation from a sherd tempered Chacoan II type? The gradual change to finer tempers (tuffs, fine sand, pumice) may be the result of exploiting new and different environments by mobile people. Temper selection is certainly one of the most notable attribute inconsistencies for Santa Fe Black-on-White. However, in almost every case temper, regardless of its type, was usually very well ground to produce the most notable characistic of this pottery type–its very fine-textured paste.

Honea's efforts to show a chronological distinction between the varieties of Santa Fe Black-on-White seem to be based solely upon how much or how little slip was applied to the decorated surfaces. His earliest variety (Pajarito Variety) was washed, as opposed to the next in the sequence (Peralta Variety) which had a thicker slip which tended to slough off. Both of these were replaced by the latest variety (Santa Fe Variety), whose surfaces were floated or slipped with the same clay which was used for the paste. Herein lies a technical problem which weakens the validity of these proposed varieties. It is extremely difficult with any consistency to distinguish a slip from a wash. Separation based upon this criterion, which may be considered secondary, is indeed very shaky and ultimately lends itself to ambiguity.

It is very possible that temporal and regional variations of Santa Fe Black-on-White do exist. This is particularly apparent in the temper variation. The floated blue-grey variety of Santa Fe is the source of some interesting speculation: why stop slipping with white kaolin and ultimately begin floating the surfaces, or slipping, with the same clay used to make the paste? This change appears to occur gradually and may represent technique derived from interaction with the Gallina or San Juan area as is thought to be the case with the introduction of carbon paint. However, the possibility of economic and political factors resulting from a population influx could have affected the availability of kaolin and other slip clays and should not be overlooked. These factors would vary regionally.

Techniques of manufacture and decoration from the Chaco and Gallina continue to be reflected in the Rio Grande with the development of Santa Fe Black-on-White. However, in addition to these sources of inspiration, ties with the San Juan (P-II stage) can be seen plainly in the design system. In what appears to be a direct line of development (Stubbs and Stallings 1953: Figure 70) from Santa Fe Black-on-White to related successive types of the Classic Period (A.D. 1325-1600), this Mesa Verdean influence is seemingly perpetuated.

This line of development culminated with the development of Wiyo Black-on-White (Stubbs and Stallings 1953). Galisteo Black-on-White is relatively late (Breternitz 1966:75-76:Indigeneous, 1051 to 1612, best between 1300-1393) and exhibits very strong similarities with Mesa Verdean pottery of the same period. The influence from the San Juan (crackled hard white slip on interiors and exteriors; flattened rims, often ticked; sherd and crushed rock temper; motifs like Mesa Verdean design system dominant) region is probably most apparent in Galisteo Black-on-White.

The development of Wiyo Black-on-White, in most respects, appears to be a clear case of local potters, living in and around the northern Pajarito Plateau region near the confluence of the Rio Chama and the Rio Grande, attempting to produce Santa Fe Black-on-White while utilizing local materials.

Most authors have simply accounted for the development of Wiyo Black-on-White as resulting from a tendency to favor tuffs for temper, thus producing the soft but finely textured pottery first described by Amsden (1931:24-25–see Biscuitoid Type). Shepard (1936: 476) observes "biscuitoid" as having "many resemblances to blue-grey and may be regarded as a late, specialized form of the type." Luebben (1953:29) documents the presence of transitional forms from Santa Fe Black-on-White to Wiyo Black-on-White at the Leafwater Site near Mendanales on the Chama River. Unfortunately, detailed description or microscopic analysis was not provided.

The perpetuation of elements characteristic of the Mesa Verdean design system continues into Wiyo Black-on-White. In what may prove to be an earlier influence, strong affinities to the Gallina style (which also shows strong stylistic influences from Mesa Verde) can be seen on many specimens; bold and often carelessly drawn broad lines and quartered or paneled simple design layouts on a floated or lightly slipped surface typify these affinities.

For the Upper Rio Grande, the development of the black-on-white pottery is characterized by what seems to be a generalized ceramic style. Fine distinctions between existing varieties and types are difficult to make on the sole basis of external features. Potters, exposed to new ideas, are probably more apt to copy external features and to continue exploiting and using their own sources of clay and temper. The transition from one type to another may occur almost without notice, leaving the source or origin and influence open to question. It is

suggested that excavation and intense technological study of ceramics is still an absolute necessity before we may begin to comprehend fully the interactions and movements of prehistoric peoples in the Upper Rio Grande Valley.

The matte paint decorated pottery of the Coalition and early Classic Periods was gradually supplanted with the adoption of the glaze decorated pottery which first appeared early in the 14th century. Glazes and subglazes were developed, probably unintentionally at first, in the prehistoric communities of the Little Colorado just prior to the beginning of the 13th century. With this stylistic development in the Little Colorado Red wares enjoying a rising popularity, the technique found its way, through trade and/or eastward migration, into the Middle Rio Grande Valley in and about the vicinity of Albuquerque.

Following a poorly defined period of transition (Mera 1935:31-33), the development and manufacture of the Rio Grande glazes continued until the late 17th century. Style groupings have been recognized with the most distinctive development being the consistent change in bowl rim style which has served as a reliable temporal indicator.

Anna O. Shepard (1942), in a very technically oriented examination of the glaze ware, has used temper type and relative frequency of style groups within districts in an attempt to isolate centers of development for each glaze group. She states that the "course of development" will not be the same for each district and that the "length of time that it took for any one district to begin producing it would depend upon the source of lead ore" (Shepard 1942:174). She also points out that the spread of the glaze "idea" would not only have been affected by the acquisition of foreign or local raw materials involved in their production, but that political and economic factors at any given time would certainly have had their effect.

Shepard's analysis points to the importance of the Albuquerque area in the development of the earliest glaze-paint style: Glaze I-Red. This type occurs in a relatively high percentage in the Albuquerque district as compared to other districts in the Middle and Upper Rio Grande Valley. The use of sherd temper in the early glazes is dominant in the Albuquerque area, occurring in 80% of the ceramic assemblages (Shepard 1942:166, Figure 16). Another factor which emphasizes the importance of this district is the seemingly direct line of influence evident in the presence of Little Colorado Red ware sherds which are antecedent to Glaze I or A-Red group.

One major divergence from the apparent norm is the use of basalt as temper in preference to sherd temper in Glaze I-Red pottery produced in that area around Zia. Shepard considers Glaze I-Yellow, Glaze II and Glaze III collectively (the "Intermediate Group"), in that all three styles are slipped white-to-yellow and primarily are tempered with andesite which occurs rather infrequently within the Upper Rio Grande Valley. The major outcrops appear in the Ortiz Mountains and Cerrillos Hills (Shepard 1942:152), both of which are near the Galisteo district. Shepard considers this district the center of development of Glaze I-Yellow, Glaze II and Glaze III; her sample showing a high percentage of occurrence for the andesite temper. In chronological order, occurrence of andesite temper was 73% in Glaze I-Yellow, 82% in Glaze II and 68% in Glaze III when compared with 7% andesite temper in Glaze I-Red (Shepard 1942:158). The homogeneity of temper selection in the manufacture of these types caused Shepard (1942:158) to describe this "Intermediate Group" as being "a clear-cut example of correlation of style and temper."

It appears that the late groups–Glaze IV, Glaze V and Glaze VI, show the greatest flexibility in temper selection and are more evenly distributed throughout the Middle and Upper Rio Grande Valley than are the earlier groups. Shepard (1942:72) suggests that this late glaze group represents "centers of production in a number of different localities, with consequent local variation in style."

The lack of a dominant temper in such a wide distribution for these late styles may suggest exportation of some types, but also points to the dependence upon local production. Again, the Galisteo district (andesite temper) plays a major role in the development of this late group. Shepard (1942:191) also indicates the northern Pajarito Plateau (vitrified tuff temper), the Zia area (crystalline basalt) and Bernalillo area (vitreous andesite) as other local centers of development.

Shepard's analysis should not be considered conclusive and her observations, as presented in this discussion, do not offer a complete technical or stylistic comparison. However, our intention, as was Shepard's, was to delineate some technological data which can be used as a more reliable indicator of regional variation. Whatever the bias, in the long run many kinds of data must be gathered before those attributes, which are culturally significant, can be isolated.

ANALYSIS

The analysis of sherds excavated from LA 12511, LA 12512, LA 12522, LA 5013 and LA 5014 began with an initial attribute analysis. Marked sherds were separated first into gross categories by slip color and surface treatment (utility wares). With the microscope (20x and 40x), painted sherds were further separated according to paint type and unique paste characteristics. Utility sherds were sorted according to corrugated and plain body types with style of corrugation and paste attributes as primary criteria.

Each type or grouping of sherds was then examined with several attributes being monitored. Temper type and corrugation style were monitored for the culinary pottery in an attempt to define more accurately any relationship which might exist between these two variables and the painted pottery found in context with the utility pottery. The results of this analysis pointed to an association of corrugation style, not temper type, with painted sherds of a particular type and time period.

Charred and uncharred utility sherds were also monitored with room function analysis in mind. Frequency of occurrence is an additional variable when using charred/uncharred utility wares as one of many indicators of room function.

Type descriptions for culinary wares, derived from the available literature, occur all too infrequently and are lacking in concise, technological morphologies. The culinary pottery in this analysis is described in the most

comprehensive manner possible; when comparison and association can be made with named types and their descriptions in the literature, those affinities will be pointed out.

Published descriptions for black-on-white and glaze painted pottery proved to be useful; however, most are inadequate and some ambiguous. At best, the literature provided gross regional categories within pottery types, an indication that cultural and cross-cultural dynamics within the Upper Rio Grande Valley are not well-understood.

With this in mind, the classification into recognized types, when possible, was based upon primary technological criteria. Important criteria are: the attributes of the paste, coupled with those of the surface finish and, finally, the design system. In any given sample, there will always be a number of seemingly related sherds which deviate from the type descriptions. This is not necessarily cause for the naming of a new type or variety. Innumerable factors may account for a subtle or not so subtle difference: a craftsman who is inexperienced, a poorly controlled firing atmosphere, or even the whim of the individual potter. Differences existing within a pottery type may indicate a regional exploitation of unique raw materials or external stimuli.

Only with adequate regional and cross-regional sampling, coupled with reliable technological analysis, may these subtleties be considered an indicator of a new variety or type; individual caprice should be recognized, if we are to continue using ceramic typologies in the attempt to delineate regional problems.

Collectively, the painted ceramics excavated from all five sites in White Rock Canyon represent a kind of diversity which one should expect, from a technological standpoint, as being the result of individual capabilities and regional environmental limitations. Differences noted within categories were monitored and isolated. Comparisons were made within the sample and published descriptions and other collections. It was found that the majority of those potentially meaningful differences were subjective and not demonstrably part of a pattern of technological or stylistic change.

In some cases, it was impossible to assign certain intrusive sherds (those not made locally within the confines of the Upper Rio Grande Valley) to currently used types. They seem to represent a deviation from their "parent" source as the result of the utilization of some foreign raw materials. However, recognition of certain paste attributes (temper and paste texture) and design style enabled the classification of these sherds according to regional ceramic traditions.

Specific attributes were monitored for carbon-painted black-on-white sherds (Santa Fe Black-on-White) excavated from each site in an attempt to correlate these materials with the findings of Kenneth Honea (1968) and others. Temper type, relative hardness, surface color and finish were correlated with stratigraphic occurrence. The data only served to demonstrate the notable lack of standardization for this very versatile pottery group. Unfortunately, the evidence left open the question as to whether or not there exists a culturally significant change from slipping, with white kaolin, to self-slipping and floating of decorated surfaces; this is a gross difference and, to date, only speculation offers explanation for this problem.

Variation within morphologies of glaze painted sherds is as notable as any other ceramic type. Classification of the glaze pottery was facilitated 1) by the fact that the majority fell early in the glaze sequence when styles externally exhibit the least amount of diversity and 2) by the presence within each assemblage of temporally recognizable rim sherds.

Temper analysis showed some variation within the larger collections and possibly indicates a limited number of contemporary sources for glaze decorated pottery.

One major problem arose in the classification of those sherds from vessel bodies which did not show distinguishable attributes from other glaze types of the same period. The separation of these sherds into types is dubious. They were sorted by general attributes and were utilized as a possible temporal indicator.

In an effort to standardize terminology and nomenclature, it was recommended by the Eighth Southwestern Ceramic Seminar (September 23-24, 1966) "that general major groupings of Rio Grande Glaze I, Rio Grande Glaze II, etc. be standardized." This is with "disregard for the original source that defined the groups as A, B, C or I, II, III, etc." The results of this seminar do not discount the data and sequences compiled by H.P. Mera or A.V. Kidder; rather, it organizes the work of both authors into an updated and, perhaps, more comprehensive analysis of the Rio Grande glaze groups. In this light, glaze groups described in this analysis are the result of a comparison of accepted descriptions, but have been named accordingly to the suggestions from the seminar.

Description of Utility Ware

Typologies for utility pottery are virtually nonexistent. There always has been a tendency to become overwhelmed by the volume of utility pottery and its seemingly undifferentiated appearance. This analysis has been able to identify a number of texture types, all with essentially the same temper.

The following descriptive terms were utilized in order to separate the several texture types for corrugated pottery:

1. Corrugated/Oblique Indented: individual exterior coils of manufacture are indented (probably with the finger) at a slightly less than 90 degree angle, producing an overall effect of oblique indentation;

2. Corrugated/Ribbed: individual exterior coils of manufacture are rounded at each coil juncture, producing a rolled or ribbed effect;

3. Corrugated/Flattened: individual exterior coils of manufacture are smoothed and broadened to produce a flattened coil;

4. Corrugated/Smeared Indented: individual exterior coils are textured with shallow indentations which are, in turn, smoothed or smeared with a scraping tool;

5. Plain/Body: individual coils of manufacture are completely obliterated, all surfaces are scraped and smoothed. Sherds separated into this category probably represented untextured plain ware or are sherds from the vessel body, above or below the textured area.

Utility sherds excavated from all five sites represent an amazingly undifferentiated assortment with the one exception of texture variation. Color variation was only slight, mostly the result of control, or lack of it, within the firing atmosphere. Tempering materials were uniform throughout; a quartz-bearing rock and/or sand was predominant. Mica, as a constituent part of the clay, was observed.

Due to the lack of definitive data in most cases, correlation of the descriptive categories defined for this analysis with those in the literature proved to be difficult. Temporal and spatial distributions for corrugated wares are not well-understood in light of the fact that many corrugated styles may overlap any number of ceramic horizons. H.P. Mera describes a smeared indented style which he calls Tesuque Smeared-Indented (Mera 1935:14). It was his opinion that this style was a distinct type and had the same temporal distribution as Santa Fe Black-on-White. It is quite possible that the smeared indented category of this analysis is analogous to Tesuque Smeared-Indented. This is suggested by the sherd assemblage excavated from LA 5014; out of 1,095 utility sherds recovered, 76.6% were sorted as corrugated/smeared indented and were associated with a painted assemblage which included Santa Fe Black-on-White.

It is possible that each stylistic category used for the separation of utility wares is representative of distinct ceramic developments. However, at present, the technological data and the existing archeological record do not allow definite conclusions.

Descriptions of Painted Ware

Kwahe'e Black-on-White

1. Paste

a. Color: uniform grey to whitish grey; may exhibit light or darker grey core.

b. **Inclusions**: Finely-ground crystal pumice and crushed igneous rock or rounded sand predominate; only a very small portion of the sample exhibited crushed sherds in combination with minor quantities of fine-ground crystal pumice and/or crushed rock. Isolated crystals of gypsum, biotite and calcite were observed.

c. **Texture**: Fine texture; inclusion particle size averages less than 0.50 mm which causes the paste to appear sparsely-tempered, granular and dense.

d. **Fracture**: fairly straight. Fresh break snaps or chips away from the body; unweathered surface appears, to the unaided eye, to be fairly smooth and fine.

e. **Hardness**: approximate range - 3.0 to 3.5 (Mohs' Scale).

2. Surface Features

a. **Color**: exteriors of bowls and interiors of jars are a strong medium grey with some variation to a lighter or brownish grey. Often these surfaces are the same color as the paste.

b. **Treatment**: all surfaces of both bowls and jars are well-scraped and smoothed, producing an evenness to the surface. Interiors of jars and exteriors of bowls may exhibit, on occasion, low parallel ridges left during the scraping process. To the touch, undercorated surfaces feel rough; however, temper rarely protrudes through the surface. Decorated surfaces are polished (over both slip and paint) haphazardly producing an intermittent luster. Only one bowl sherd had a polished luster on the exterior surface.

c. **Slip**: applied to the interiors of bowls, exteriors of jars. Ranges from a thin, but chalky white slip which wears off easily, to a thin slip of the same clay as the paste which is invisible to the unaided eye. One sherd had no slip on the painted surface.

d. **Paint**: mineral composition undetermined. Color ranges from a strong black to a brownish red (color variation due to firing temperature control). Paint is matte except where a polishing stone has passed over, producing an intermittent luster. In all cases, the paint adheres well to the surface. The only exception to this may be when the paint is applied to the thicker chalk white slip; in this situation, microscopic examination shows the slip sloughing away, taking with it minute pieces of paint.

3. Comment

a. **Design System**: preponderantly solid triangles with opposed hatching (hatching line width same as framing line width). Solid elements combined with multiple parallel lines. Design examination indicates varying degrees of craftsmanship from fine to poor. Design layout was not determined from this sample. Affinities to a Chacoan (P-II) Anasazi Tradition.

b. **Time**: "Indigenous—963 plus to 1466 plus; best between 1115 and 1200 plus (Breternitz 1966: 81)."

c. Kwahe'e B/W has remained poorly defined for a number of years. H.P. Mera (1935) first defined it; Honea (1968) and McNutt (1969) have produced the most recent work.

Still poorly defined, Kwahe'e Black-on-White may impress upon the observer its similarities to Chacoan II--Pueblo II white slip mineral painted pottery. The design system (solids with opposed hatching) is similar to that found on Escavada Black-on-White. Sherd temper(common to Chacoan II-Pueblo II pottery) has occurred in Kwahe'e (McNutt 1969:11); however, differences in the raw materials (temper, in particular) allow the designation of Kwahe'e Black-on-White as a separate ceramic type in the early cultural scheme of the Rio Grande Valley.

With the introduction of carbon paint, we see the development of Santa Fe Black-on-White, which differs from its Kwahe'e Black-on-White antecedent only in paint type, but continues the use of a white slip and, in part, a Chacoan design system.

Santa Fe Black-on-White

1. Paste

a. **Color**: uniform light whitish grey; medium grey; dark "blue" grey. With the exception of the

lightest grey paste, all intensities of grey have a blueish cast. Darker core may occur. A lack of control in the firing temperature is apparent in several sherds which exhibit a warm dark brown surface; the core of these "misfired" sherds is a dark grey to blue-grey color.

b. **Inclusions:** finely-ground crystal pumice and/or very fine sand; the former is predominant. Crystal (quartz phenocrysts) pumice temper is recognized only when temper particles are large enough to exhibit gross attributes (a porous spongy texture). Welded-rhyolitic tuff occurs infrequently. Mica (muscovite), as an inherent part of the clay, microscopic lumps of clay and particles of calcite were observed.

c. **Texture:** in all cases, a fine texture; temper particle size, of those which could be measured, was as small as 0.25mm. Particles were not larger than 0.55mm. Inclusion particles can be seen occasionally with the unaided eye but is dependent upon color contrast within the paste. Usually the paste appears to be sparsely tempered, dense, very fine and "soft" or "powdery."

d. **Hardness:** approximate range - 3.0 to 3.5 (Mohs' Scale).

2. Surface Features

a. **Color:** exteriors of bowls and interiors of jars are most often the same color as the paste, ranging from a whitish grey to a deep blue-grey.

b. **Treatment:** exteriors of bowls and interiors of jars exhibit a range of craftsmanship. Most often these surfaces are fairly well scraped and smoothed, however, many will show ridges, some shallow or deep, left behind as the result of inferior scraping of the plastic clay. Interiors of bowls and exteriors of jars are always reasonably well-scraped and smoothed before slip, if any, and paint are applied. Decorated surfaces are often merely floated, causing the finer temper particles to rise to the surface creating a smooth even surface. After the paint is applied, these surfaces are polished and produce a luster of varying degrees. In rare occurrences, the exteriors of bowls often show intermittent polishing.

c. **Slip:** when used, the slip is applied to the interiors of bowls and exteriors of jars. On jars, the slip is applied from the rim to a point just below the greatest diameter of the vessel body. On bowls, slip may extend onto the exterior surface, covering unevenly an area within three centimeters below the rim or the entire surface. The most obvious lack of standardization within this type is the variation in slip application and color. Prepared white kaolin, or light clay, was applied as a slip (relatively thicker, more color) or as a wash (essentially a thin slip). The former appears to slough off easily the exception being those pieces which have been well-polished. The paste color often shows through the thin wash which causes the usually lighter appearing wash seemingly to fade into and take on the greyer or bluer color.

In addition to the white slip, a slip of the same color as the paste clay was used. Self-slipping, the result of a skillfully smoothed plastic surface, occurs frequently.

d. **Paint:** Carbon. Color ranges from a dark muted black to a faded, almost stain-like, greyish or brownish black. Paint is lustrous only when passed over with the polishing stone. This paint type readily soaks into the surface except when applied in heavier concentrations.

e. **Vessel Form:** bowl shapes predominate, rims are direct and vary slightly by curving inward or outward. Rims are pinched, rounded or flattened.

3. Comment

a. **Design System:** most of the line work is heavy and often carelessly applied. Solid, bold triangles, checkerboards, stepped lines, often appended with dots are repeated in a wide, often paneled, band which encircles bowl interiors. Design band may extend to the rim or just below a framing band of multiple parallel lines. This design system exhibits close affinities with that of the San Juan (late Pueblo II early Pueblo III) Anasazi Tradition.

b. **Time:** A.D. 1225 to A.D. 1350 (Stubbs and Stallings 1953:48). "Indigeneous–963 plus to 1612 plus; best between 1200 and 1350" (Breternitz 1966:95).

c. The lack of standardization within Santa Fe Black-on-White has been the source of confusion and speculation. To date, conclusive evidence doe not exist which points to a temporal and sequential correlation with slip color and its presence or absence. However, it is our impression based upon data recovered from LA 12511 and LA 5014, that the white slipped variety of Santa Fe Black-on-White may be a holdover to an earlier ceramic expression (probably Kwahe'e Black-on-White and its local antecendent, Chacoan Pueblo II white slipped pottery), and may prove to be the earliest of the Santa Fe Black-on-White varieties.

Wiyo Black-on-White

1. Paste

a. **Color:** uniform light brownish grey or light greyish buff. Darker and more brownish colored core often occurs.

b. **Inclusions:** a volcanic glass, either pumice or vitric tuff. Both are easily distinguished by observing the outcrop or hand specimen. However, when crushed and used as temper for pottery, they appear to be exactly the same unless larger particles happen to exhibit gross attributes. For example, the finely cellular spongy texture of pumice could be recognized if the particle size was large enough. Petrographic analysis may be the only way to distinguish pumice from vitric tuff by determining the index of refraction for both glasses (William R. Seager 1975: personal communication). In addition to the finely-crushed volcanic glass inclusions, quartz phenocrysts, which occur in both pumice and vitric tuff, were observed.

c. **Texture:** in all cases, a fine texture; particle size as

small as 0.25 mm and smaller, none larger than 0.5 mm; rarely can temper particles be seen with the unaided eye. The paste appears to be dense and "soft" or "powdery."

d. Fracture: straight to slightly uneven (concave); fresh break softly snaps away from the body; the unweathered surface appears to be fine and smooth.

e. Hardness: approximate range - average 3.0 (Mohs' Scale) with some variation to either side of the scale.

2. Surface Features

a. Color: exteriors of bowls (and probably interiors of jars, although none were observed in this excavation sample) are most often the color of the paste, ranging from a brownish grey to a greyish buff color.

b. Treatment: exteriors of bowls are well-scraped and smoothed, although some exhibit varying degrees of craftsmanship. Interiors of bowls are well-scraped and smoothed, the result often being a fine self-slipped surface. Decorated surfaces are polished over the paint to produce a lustrous surface; polish streaks and weathering affect the uniformity. Broad parallel painted lines and intermittent polishing infrequently occur on the exteriors of bowls.

c. Slip: a thin slip, the color of the paste clay, is applied to bowl interiors. The self-slipped interior is common.

d. Paint: Carbon. A clear strong black to faded greyish black. Luster in all cases is due to polishing.

e. Vessel Form: bowl shapes are predominant. Small jars and dippers are known. Ollas have not been reported (Stubbs and Stallings 1953). Rims are direct and rounded or pinched. Everted rims of varying degrees are common and often exhibit a painted rimline.

3. Comment

a. Design System: exhibits strong affinities to Santa Fe Black-on-White. Heavy linework coupled with bold geometric solids drawn out in a paneled band which encircles bowl interiors. Design band begins just below the rim or below a single broad framing line. This design system, as that of Santa Fe Black-on-White, exhibits close affinities to a San Juan Anasazi Tradition.

b. Time: "Indigenous—963 plus to 1581 plus; best between 1300 and about 1400" (Breternitz 1966: 104).

c. In terms of technology and style, there appears to be a direct line of influence from Santa Fe Black-on-White to the development of Wiyo Black-on-White. Tree ring dates suggest that Wiyo Black-on-White continued in use later than Santa Fe Black-on-White (Breternitz 1966). However, at Pindi Pueblo, Stubbs and Stallings (1953:15) report, prior to the end of the pueblo's existence, a secondary rise of Santa Fe Black-on-White. This secondary occurrence of Santa Fe Black-on-White would have to have occurred sometime during the mid-14th century; therefore, indicating its continued contemporaneity with Wiyo Black-on-White.

LITHIC ANALYSIS: METHODOLOGY

Attributes and divisions monitored during the lithic analysis were chosen because of their potential for yielding information on functional activities on both the inter- and intra-site levels. They include material type, presence or absence of cortex, cores, heat treatment, whole flakes, partial flakes, nondiagnostic shatter, blades, pressure flakes, reduction assemblages, and wear on flake tools, bifaces, hammerstones and ground stone. Specific reduction techniques were not monitored beyond the limits of these attributes. It is felt that specific reduction techniques, as observable in the archeological record, are not necessarily cultural but will vary according to the quality and quantity of the available lithic material types and hammerstones, the ability and personal technique of the knapper, and the intended function of the flake tool.

A classification of lithic material types has been proposed for the White Rock Canyon area (Warren, Volume 1), and was utilized in this analysis for green banded obsidian (3526), obsidian tinged with reddish brown (3521) and chalcedony with milky white and other inclusions (1215). The type of material for all other lithics was monitored by gross categories (chert, chalcedony, obsidian, etc.). With one exception from LA 5014, the chert and chalcedony were of the Pedernal variety.

The presence or absence of cortex was monitored with regard to three avenues of potential information:

1) That the frequency of its occurrence within the site assemblage would indicate whether the inhabitants were quarrying specific source areas and preparing cores and preforms at the source, or gathering core material at random and preparing them on site.

2) To further complement the data regarding source areas, the cortex was examined for wear caused by water action (stream tumbling, etc.) and distinguished from that which exhibited no wear, or wear formed by other weathering activities.

3) The presence or absence of cortex on those lithics which exhibited utilization in the form of retouch, or wear patterns, was noted in an attempt to determine the frequency of cortex used as backing.

Debitage was divided into two general categories: whole flakes, and partial flakes or nondiagnostic shatter. Whole flakes were defined as those pieces of debitage which possess a platform and a hinge, step, or feather termination. This category was further subdivided into those flakes thought to have been formed by pressure and blades. Pressure flakes were defined by the following attributes:

1) Relative thinness in comparison to the rest of the specific assemblage.

2) A salient bulb of force.

3) Length being generally twice the width.

4) A ridge located centrally along the long axis of the

dorsal surface (Crabtree 1972:15).

Blades were defined as specialized flakes with parallel or subparallel lateral edges; the length being equal to or more than twice the width (Crabtree 1972:42).

Partial flakes are those pieces of debitage which did not meet the criteria for whole flakes. For the purposes of this analysis, partial flakes were included in the same category as those angular fragments which resulted from internal fracturing of the core material and were detached during the reduction process. Such angular fragments are referred to here as non-diagnostic shatter.

It was, at times, possible to isolate a "reduction assemblage" within a specific spatial provenience. Ideally, such an assemblage would include a core, whole flakes with cortex, whole flakes without cortex, partial flakes and non-diagnostic shatter, bifaces, or attempts at bifaces as well as hammerstones, etc. A reduction assemblage of this nature is produced when the manufacture of bifaces is the primary motive. The production of simple flake tools is less apt to produce an assemblage similar in either morphology or volume. Thus, a lithic reduction assemblage refers to the material recovered from a locus of biface manufacture.

All of the debitage was examined for wear. Because the artifacts were not bagged individually, wear patterns were monitored with considerable caution. While abrasion in the form of edge rounding, polishing and striae were monitored when macroscopically obvious, little credence was given to this type of wear when viewed microscopically (20x and 40x). Thus, the position and edge orientation of a regular series of microflake scars became the major focus of the wear pattern analysis (see Tringham *et al.* 1974). Inference concerning the method of utilization of any particular tool was based upon the following criteria.

Cutting: bifacial microflake removal will tend to be oriented at a diagonal in one direction to the edge. Often one side will exhibit more microflake removal than the other. Polishing and rounding of high points will sometimes occur. If the cutting was limited to soft material, polishing may also occur on low points. Striae may occur parallel to the edge.

Sawing: bifacial microflake scars will be oriented in all directions to the edge. Distribution of microflake scars will be oriented in all directions to the edge. Distribution of microflake scars will tend to be equal on either side of the edge. Polishing and rounding may be found on high points.

Scraping: unifacial microflake removal perpendicular to the edge. Rounding, squaring and polishing of the utilized edge may also appear. Striae will tend to be perpendicular to the edge.

Drilling or Engraving: projection or acuminates (Crabtree 1972:33) displaying rounding, polishing, striations or microflake removal.

Chopping: edges which exhibit battering.

Bifaces and other prepared tools were examined for wear using the same criteria. However, it was often difficult to distinguish microflake removal from intentional retouch.

Hammerstones were identified by the occurrence of battering wear on one or more surfaces. Ground stone was inspected for intentional shaping, polish, functional battering, presence of pecking scars and directional striae. Axes and other stone implements were examined in a similar fashion.

On those lithics exhibiting cutting, scraping or sawing wear, the angle of the worn edge was monitored as being either more than or less than 45 degrees. In the site discussion, those with an obtuse angle are noted. The remainder may be presumed to possess an acute angle.

BONE ANALYSIS

The faunal remains excavated from sites LA 12512, LA 5013, LA 12522, and LA 5014 were shown to Dr. Volney W. Howard Jr., Associate Professor, Animal Science Department, New Mexico State University. The following observations are his comments concerning the analysis of twenty-two bone specimens.

Due to the nature and preservation of the sample, Dr. Howard was unable to identify and classify the species and genus of each specimen. However, using gross attributes, he was able to superficially assign each bone the biological taxon of "family."

Dr. Howard had some doubt as to the relative age of some of the specimens, which he felt did not appear to be old (utilized by prehistoric peoples). His opinion was based on the color, texture and friability of the bone. However, the placement of these bone specimens within their respective sites indicates that they were in context and have a good possibility of being directly associated with a prehistoric situation. Factors which may account for newer bone being found in context are rodent burrowing and erosion.

The following is a breakdown, site by site, of the twenty-two specimens recovered during the project.

LA 12512
- Grid D10-1-1
  - Rodent — family *Sciuridae*(?) (Squirrel) lower incisor
  - Rodent — family (?) scapula
- Feature 1-3-1
  - Rodent — family (?) two femur fragments

All specimens are thought to be intrusive.

LA 12522
- Feature 6-1-1
  - Deer — *Odocoileus sp.* (probably Mule deer) phalange
- Feature 1-1-2
  - Turkey — *Melegris sp.* (Merriams turkey?) clavicle
  - Rabbit — *Sylvilagus sp.* (Cottontail) femur
  - Rodent — Family (?) ulna
  - Deer — *Odocoileus hemionus*? or Pronghorn Antelope — *Antilocapra americana* burned tibia or fibia

LA 5014
- Grid I-30-3-1
  - Rabbit - *Sylvilagus sp.* (Cottontail) pelvic girdle
  - Squirrel — Family *Sciuridae rostrum*
  - Grey fox, porcupine, or raccoon — Family

Erethizontidae pelvic girdle
Gopher – Family *Geomyidae* – left side of mandible
Feature 8-1-1
Deer – *Odocoileus hemionus*? (Mule deer) femur fragment (burned)
Feature 6-1-7
Rabbit – *Sylvilagus sp.* (Cottontail) pelvic girdle (burned)
Feature 10-1-1
Deer – *Odocoileus sp.* (probably Mule deer) tooth-hypsodent and selenodont, probably from young animal
Feature 11-4-1
Coyote or dog – Family *Canidae* – left tibia (2 fragments)
Grid K27-1-1
Large bird – turkey, hawk or eagle
Feature 9-4-1
Coyote or dog – Family *Canidae* or immature Deer – *Odocoileus hemionus*? or immature Pronghorn Antelope – *Antilocapra americana* – rib fragment.

LA 5013
Feature 1-2-1
Deer – *Odocoileus hemionus*? or Pronghorn Antelope – *Antilocapra americana* – femur fragment (burned).

FLOTATION: LA 12511, LA 12512, LA 12522, LA 5013, LA 5014

There have been a number of ethnobotanical studies in the area and in nearby areas with similar ecozones (Lange 1959; Curtin 1965; and Whiting 1966). However, assigning uses or assuming climatic conditions from the data recovered in this study is speculative at best. It is hoped that this information will add to the existing data on vegetal remains from archeological sites in the area, allowing more conclusive statements to be made in the future.

The flotation samples from LA 12511, LA 12522, LA 5013 and LA 5014, were assigned Lab Flotation Numbers and processed. LA 12511 samples yielded no identifiable vegetal material. The results from the remaining three sites are summarized in Table 2.1. Corncob remains were found in LA 12522 and are treated separately in Table 2.2. We were unable to positively identify five distinctive genera, but have provided drawings.

Due to problems of erosion, alluvial deposition, rodent disturbance, and generally shallow fill, it was felt that only charred remains should be considered associated with the sites' occupations. For this reason, in addition to its extremely good condition, the *Astragalus mollissimus*, FS-19, was considered modern.

The seed depicted in Drawing No. 1 is most likely of the Family *Chenopodiaceae*. It has a pronounced raphe and is internally convolute. Due to its charred condition, the coat surface texture could not be determined.

Drawing No. 2 shows the granular seed coat which was apparent even though charred. The specimen was orbicular and had a rounded hilum. No other features were noticeable.

Drawing No. 3 shows a spatulate shaped seed with a very smooth coat. Hylum and micropyle were not visible.

The remains drawn in No. 4 seem to be pods; narrowly elliptical and laterally involute. Funiculi were not present, but there were negative impressions which may have housed seeds. The tissue was noticeably thickened with an undulating exterior surface.

Drawing No. 5 shows what is most likely a fragment, as there were no identifiable features to aid in identifi-

TABLE 2.1

FLOTATION RESULTS FROM NMSU–COCHITI PROJECT

SITE	SPEC. NO.	PROV.	IDENTIFICATION	AMT.	CONDITION
LA 12522	Feature 7-3-1	Firepit 30cm	Corn kernels – *Zea* sp.	2	Charred, fragment
			Unid. "pods" – see drawing No. 4	16	Charred
			Unid. seed – see drawing No. 3	2	Charred
			Bark – *Juniperus* sp.	1	Charred
LA 5014	I-32	50cm – grid	*Chenopodium* sp.	1	Charred, fragment
	Feature 9	Cist B-1	Unid. seed – see drawing No. 2	2	Charred
			Unid. seed – see drawing No. 5	1	Charred, fragment
			Unid. seed – see drawing No. 1	1	Charred
	Feature 13	Firepit	Juniper twig – *Juniperus* sp.	1	Charred
			Pine bark – *Pinus* sp.	2	Charred
	Feature 14	Firepit	Wooley loco seed – *Astragalus mollissimus*	1	Uncharred
	Feature 9	Firepit J	Pine bark – *Pinus ponderosa*	2	Charred
LA 5013	Feature 1-7-4	Firepit	Juniper seed – *Juniperus* sp.	11	Charred, whole, fragment
			Unid. seed – see drawing No. 1	1	Charred
			Goose-foot – *Chenopodium fremonti*	2	Charred

cation. The shape is distinctive, however, and could be a helpful clue.

There were no remains of corn found in LA 5014 or 5013; but both kernel and cob fragments were recovered from LA 12522. Because of the lack of evidence, intrasite comparison is impossible, but by following the format for cob attribute analysis used by Ford (1968), intersite comparisons in the Cochiti area can be made.

Generally, there was a noticeable lack of organic material to be analyzed. Whether this is characteristic of the sites excavated or due to the sampling and processing techniques cannot be determined without further work in the area with comparable sites.

TABLE 2.2
CORN COBS FROM A LA 12522 HEARTH
(Feature 6-3-2)

ROWS	MAX.	MIN.	X-SECTION	LENGTH	AREA	FORM
8	1.5cm	1.2cm	E	1.3cm	IM	–
8	1.4cm	.7cm	E	3.0cm	IT	ci
–	–	–	–	1.4cm	IM	–
–	–	–	–	1.6cm	IM	–
–	–	–	–	.7cm	IT	ci
–	–	–	–	.5cm	IM	–

Key to symbols: E (elliptical)
IM (incomplete, mid-section present)
IT (incomplete, tip end present)
ci (cigar)

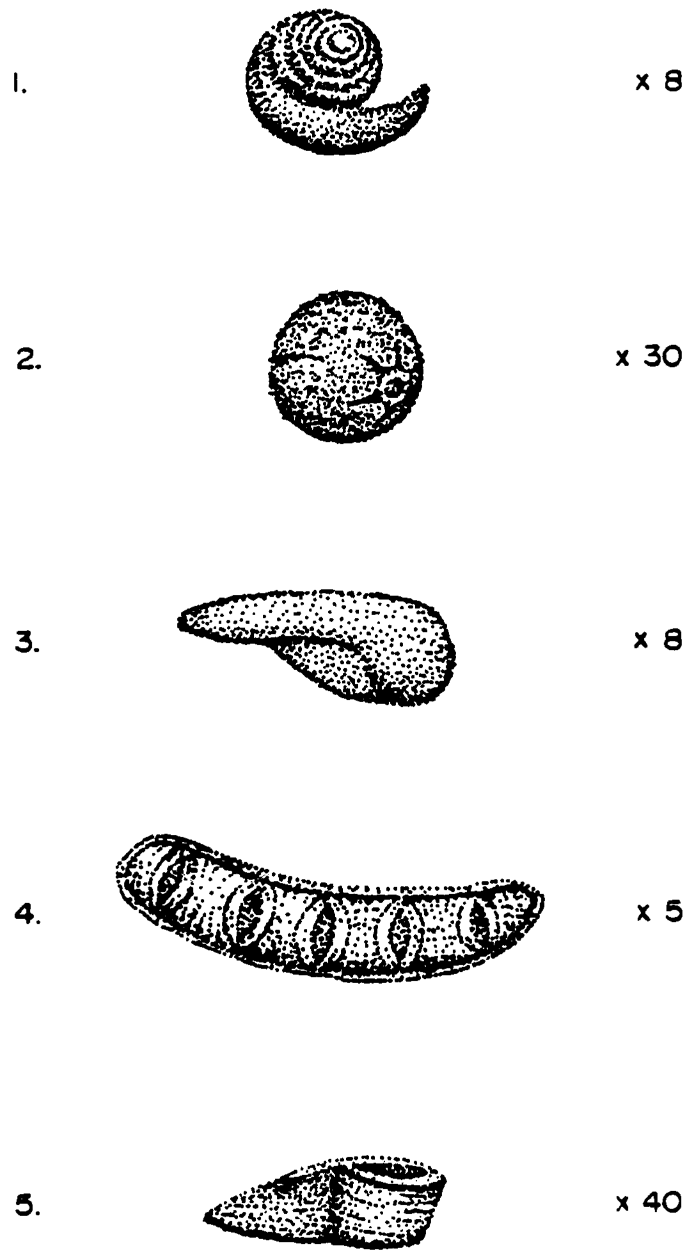


FIG. 2.1 Seed Pod Drawings

Chapter 3
Description of Five Sites in White Rock Canyon: LA 5013, LA 5014, LA 12511, LA 12512 and LA 12522

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LA 5013

Introduction

LA 5013 was a single component semisubterranean structure. It was constructed of dry laid basalt clasts with a boulder in the existing hill being incorporated in the fourth wall. Excavation began April 3, 1975, and was completed on April 9, 1975. The elevation of LA 5013 is 5290 ft above sea level.

LA 5013 lies 200 meters upstream from the mouth of Medio Canyon and 50 meters from the west bank of the Rio Grande. Basalt talus rising sharply to mesa tops on either side of the river creates a canyon approximately 300 meters deep. The soil ranges from sandy loam to sand at water's edge. The long axis of the structure is oriented 64 degrees east of true north and is located on a 30 degree slope.

Method of Excavation

During the initial survey it was noted that the fill of LA 5013 was probably very shallow and excavation was undertaken with this in mind. The first 5cm of fill consisted of accumulated crusty lichen, snake weed, rabbitbrush, side oat grama grass, loco weed, in addition to a large amount of rubble from the walls. This first level was removed by trowel. Subsequent levels were trowelled and shoveled by 10cm levels.

Troweling the first 5cm and finding no floor, a test pit 50cm square was sunk at that level about mid-room. At a depth of 10cm, one chert flake was recovered. After lengthening the test pit 30cm toward the southeast wall, charcoal and two small round, smooth river cobbles approximately 25.4cm in circumference were found at the 30cm level. Six or eight large basalt rocks that had been part of a wall had to be cleared before widening the trench to 0.9 meters by 1.5 meters by 1.8 meters. At the 40cm level, a piece of slab metate was found. The entire room was cleared at the 40cm level before the second test pit was started. This second test pit revealed the floor 5cm to 10cm below.

A fireplace was in the southwest corner with a smooth, slightly raised adobe collar incorporated into the floor. Roots growing along the floor had done some damage to its surface, but what remained was hard and smooth with a definite ring to it when trowelled. There was a slight incline or ramp in the floor upward to the door opening on the east end of the room. After excavation was completely accomplished, sub-floor was tested, revealing large stones under the ramp. Carbonized soil samples were taken from the floor and firepit for flotation and Carbon 14 analysis.

Architecture

This room appears to be D-shaped, but this is a result of the 45° wall slump that has occurred. Instead, the room formed a rough rectangle. The north and south walls were 3.1m long. The east and west walls were 1.65m long. The walls averaged 1.08m in height and 0.44m in width.

Approximately 1.4 cubic meters of wall fall were removed from the fill of the room. This material would have increased the wall height by approximately 34cm or to a total average height of 1.42m.

The wall construction was of unaltered basalt clasts, mortared and randomly chinked with basalt fragments. The room was semisubterranean and was leveled into sloping ground, the north wall utilizing an existing basalt boulder with additional clasts added for height. Wall materials are available on location. They ranged in size from 10cm by 10cm to 2m by 2m. All clasts were placed horizontally and the walls were bonded. There was no evidence of remodeling.

The entrance was in the east wall, slightly raised with stones under the floor surface, forming a ramp.

The floor was hard but uneven and very thin. The floor had to be protected with back fill dirt during excavation as pieces of the floor would pop off when exposed to the air and to the pressure of a person walking on them.

The adobe-lined, collared hearth was in the southwest corner of the room. It was 70cm long, 45cm wide, and 10cm deep. The collar blended into the floor. The interior was filled with grey ash and a few pieces of charcoal. There was an elongated basalt clast across the front and four pot supports on the interior.

Ceramics

Total Sherds	No.	%
Tewa Polychrome	1	100.0

Sakona Black-on-Tan and Sakona Polychrome mark the beginning of the post-A.D. 1650 historic Tewa ceramics. Differing from its prehistoric antecedent, Sankawi Black-on-Cream, in its keeled rim style (Harlow 1973:Fig. 16), it is the addition of red slip to the rare polychrome form of this type that ultimately develops Tewa Polychrome. The latter differs from its predecessor in that interiors of bowls are red slipped or left unslipped. Sakona Polychrome is white slipped on bowl

interiors (Harlow 1973:28). The distinctive keel of the rim continues in the Tewa Polychrome bowl forms.

Sakona Polychrome was not manufactured after A.D. 1700, whereas Tewa Polychrome continued to be made up to A.D. 1730 (Harlow 1973:28).

Lithics

No prepared or worn flake tools were found in the lithic assemblage. The assemblage indicates that some core reduction did occur within the confines of the room. The chalcedony core and associated debitage was in the upper fill and therefore, not in good context. However, the quantity of cortex bearing and noncortex bearing obsidian flakes in floor context is indicative of a reduction sequence. The material had probably been gathered locally as all cortex was waterworn.

A slab metate fragment was also found in the upper fill associated with wall fall. Due to the proximity of this site to LA 5014, where slab metates are common, it is thought that the fragment had been collected and utilized as wall material by the inhabitants of LA 5013.

Comments

Structures of mortared unmodified basalt clasts are common in White Rock Canyon. Many of them utilize large basalt boulders as a portion of the wall. Sherds belonging to either the Glaze or Historic periods are usually associated with these structures. They are also generally larger rooms than those constructed prior to A.D. 1350. The corner fireplace may also be a temporal indicator (post -1540) as corner fireplaces were the norm for Spanish domiciles, although they are occasionally reported in prehistoric Glaze period sites (Lange 1968: 88). It is suspected that a ventilator or chimney was built into the wall directly behind the fire hearth, but the slumped condition of the wall made this impossible to determine.

The data recovered from LA 5013 indicate that it was occupied after A.D. 1650. This assumption is based on one sherd of Tewa Polychrome recovered from the

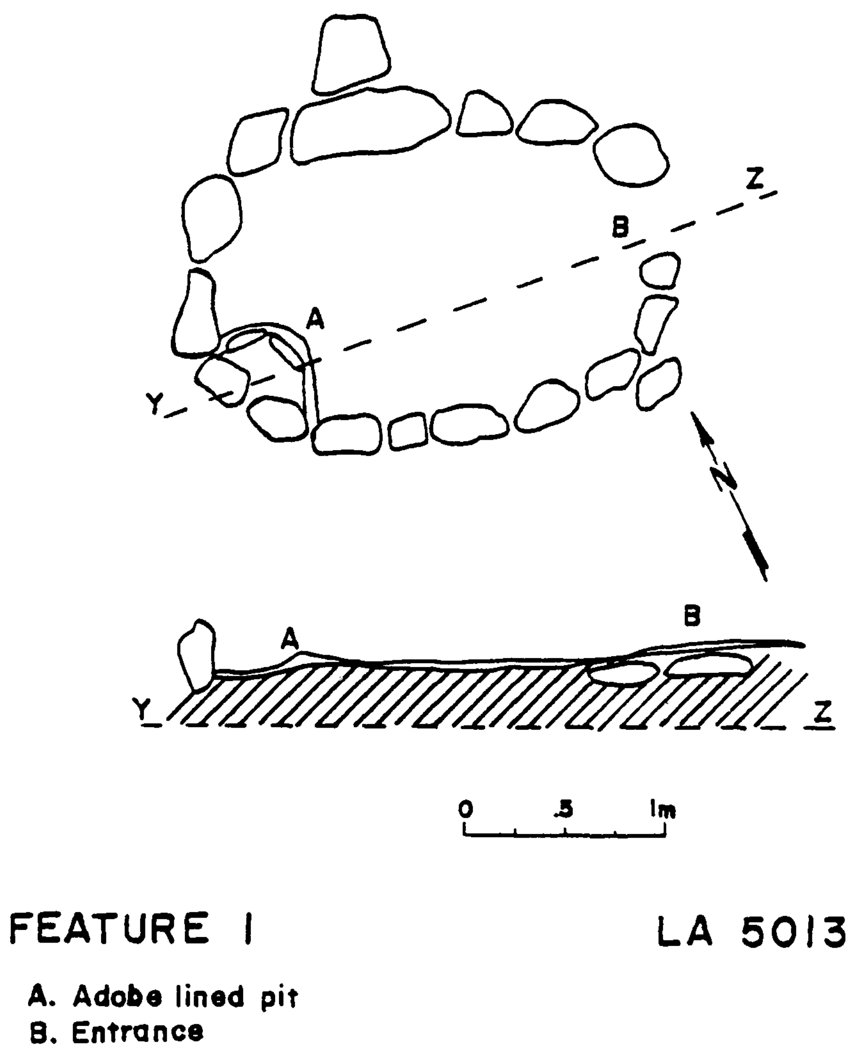


FIG. 3.1 LA 5013 Feature 1, plan view and cross section

TABLE 3.1

LITHIC ASSEMBLAGE–LA 5013

MATERIAL	WF with Cortex No.	WF with Cortex %	WF without Cortex No.	WF without Cortex %	PF or ND Shatter with Cortex No.	PF or ND Shatter with Cortex %	PF or ND Shatter without Cortex No.	PF or ND Shatter without Cortex %	Cores with Cortex No.	Cores with Cortex %	Cores without Cortex No.	Cores without Cortex %	Material in Total Assemblage No.	Material in Total Assemblage %
Obsidian	7	53.8	1	7.7	2	15.4	3	23.1	–	–	–	–	13	59.1
Obsidian (green banded)	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Chalcedony with milky white & other inclusions	–	–	–	–	3	60.0	1	20.0	1	20.0	–	–	5	22.7
Basalt	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Chert	–	–	–	–	4	100.0	–	–	–	–	–	–	4	18.2
Rhyolite	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Quartzite	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Silicified Wood	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0

KEY: WF - whole flake
PF - partial flake
ND - nondiagnostic

surface and the architectural features. LA 5013 probably represents a Pueblo V Period field house associated with one of the large pueblos in the area. However, it is equally possible that it was utilized by non-Indians due to the presence of the corner fireplace. No metal or other material of non-Indian origin was recovered. Unfortunately the scarcity of artifacts and flotation specimens leaves open for question the economic function of this site.

LA 5014

PUEBLO MEDIO

Introduction

LA 5014 is located at the mouth of Medio Canyon in White Rock Canyon, several kilometers upstream from the modern pueblo of Cochiti. The site is adjacent to the Cochiti-Frijoles trail. This ancient trail joins the Cochiti area to Frijoles Canyon, which is now a part of the Bandelier National Monument. It also provides the easiest means of access to Pueblo Medio.

The site was inhabited in the Coalition Period, which began ca. A.D. 1200 and ended ca. A.D. 1325 (Wendorf 1954:200-227). More specifically, the ceramics belong to the "Santa Fe Period," during which the innovation of carbon paint decoration occurred in the northern Rio Grande Valley.

The pueblo was constructed on a sloping sandy ridge formed by an outcrop of fine-grained basalt in the canyon bottom. A sandy juniper forest is terminated to the north after approximately 150 meters by the sheer basalt talus of White Rock Canyon. To the south, the ridge is abruptly ended by the outcrop of basalt which caused its formation. This outcrop drops sharply and overlooks the sand and cobble beach of the Rio Grande.

Pueblo Medio consists of two roomblocks. The large western roomblock is made up of 12 contiguous rooms, including a circular subterranean feature which is incorporated into the southeastern corner of the roomblock. The eight westernmost rooms are in a double row with each partition wall abutting a common center wall. The remaining rooms are on the southern and eastern edge of the roomblock extending lineally to the east. The smaller eastern roomblock consists of three lineally arranged rooms. It is laid out on approximately the same east-west axis as the western roomblock. Specific orientation was 110 degrees east of true north for the eastern roomblock and 65 degrees east of true north for the western roomblock. Magnetic deviation for the area according to USGS quadrangle maps was 13.5 degrees. To the south, and separated architectually from the roomblocks, a circular subterranean kiva is associated with each roomblock. North of the roomblocks is a sherd and lithic scatter approximately 10m wide and 70m long which runs parallel to the long axis of the roomblocks.

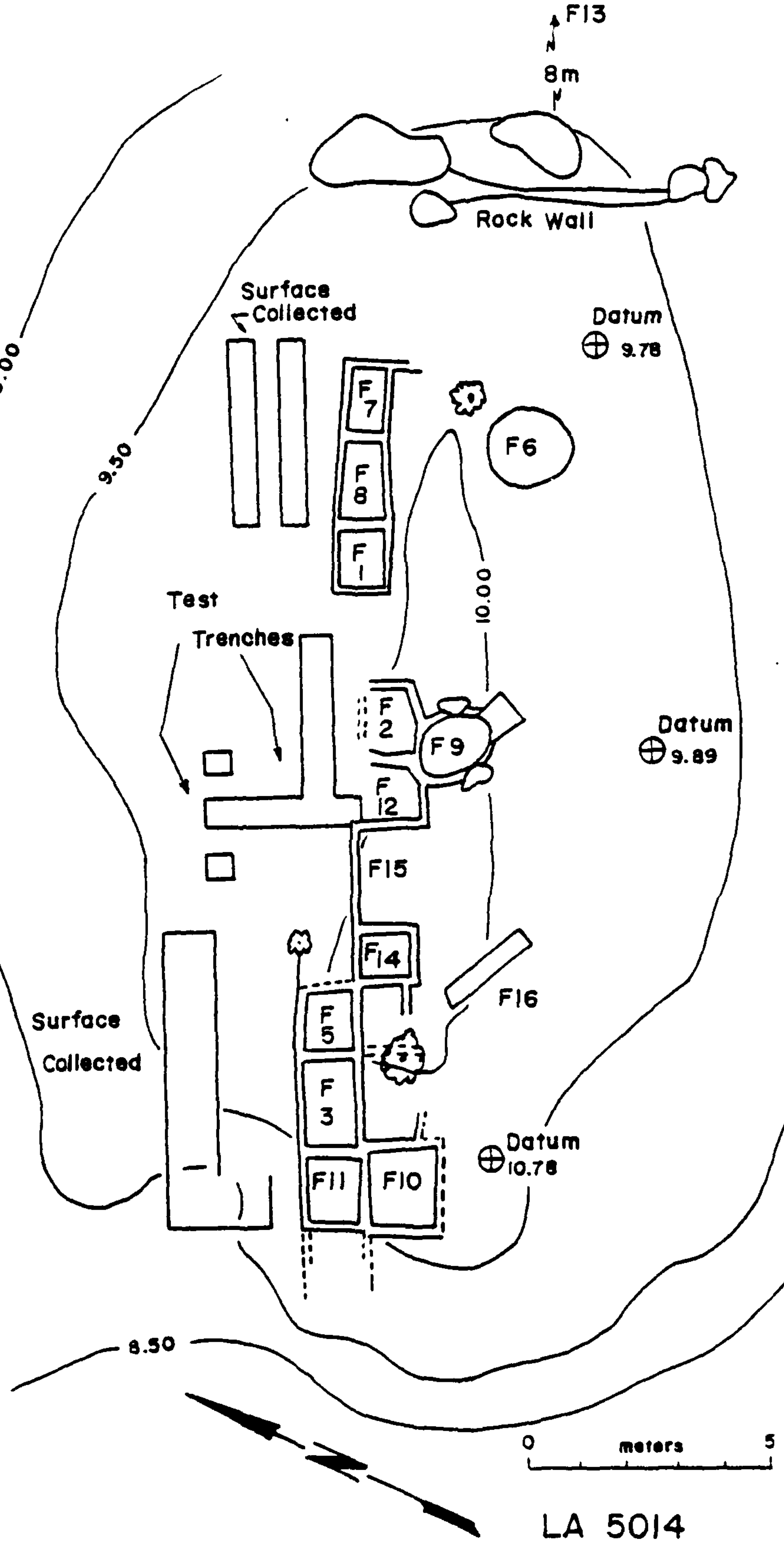


FIG. 3.2 LA 5014 Site Map

Method of Excavation

A system of one meter grids was established over the sherd and lithic scatter on the north side of the roomblocks. This was done to facilitate control of both surface collections and trenching. A baseline was set up from a point 13 meters north and 10 meters west of the northwestern corner of the larger roomblock. Divisions on the north-south baseline were lettered, while the east-west divisions were numbered. Thus, the one meter grid in the extreme northwest corner was labeled A1. This grid system is oriented 65 degrees east of true north along its numerical axis.

Surface collections were in Grids C11 through C22, D11 through D22, E11 and F11, and E12 and F12. These grids were adjacent to the western roomblock. Collections were also taken from Grids F38 through F46 and H38 through H46, adjacent to the eastern roomblock. These collections were taken to gain differential control over artifacts with a designated stratum and in the hope of recognizing both functional and temporal variations between the roomblocks.

A meter-wide trench was excavated from the sherd and lithic scatter into the eastern edge of the western roomblock. This trench began in Grid E27 and terminated in Grid K27. Fill was shoveled out in arbitrary ten centimeter levels and screened. The material was bagged according to grid and depth. The ten centimeter levels were instituted to maintain control over both obsidian and ceramics as the favorable location of the site offered the possibility of an Archaic or at least pre-pueblo occupation.

Other reasons for the trenching included the possible location of rooms not identifiable from the surface and the definition of outdoor hearths or any other type of activity area. This trench was taken down to sterile soil.

Later, an additional trench perpendicular to the first was excavated. This trench began in Grid I27 and terminated in Grid I34. The primary motive for this trench was to determine if the roomblocks were indeed separated. They were.

Three natural soil strata differentiated by color were defined in the trenches. Soil and pollen samples were taken from each. The strata were recorded.

Eleven rooms were excavated. Sampling was determined by a desire to excavate as many contiguous rooms as possible and by the presence of rather large juniper trees growing immediately in the roomblocks. The rooms were well defined from the surface in most cases. They had been surface rooms constructed of coursed adobe. Vertical basalt clasts had been set in trenches as foundation stones for the walls. Unfortunately, all of the adobe walls had been washed away, leaving only the vertical basalt clasts to define the room perimeters.

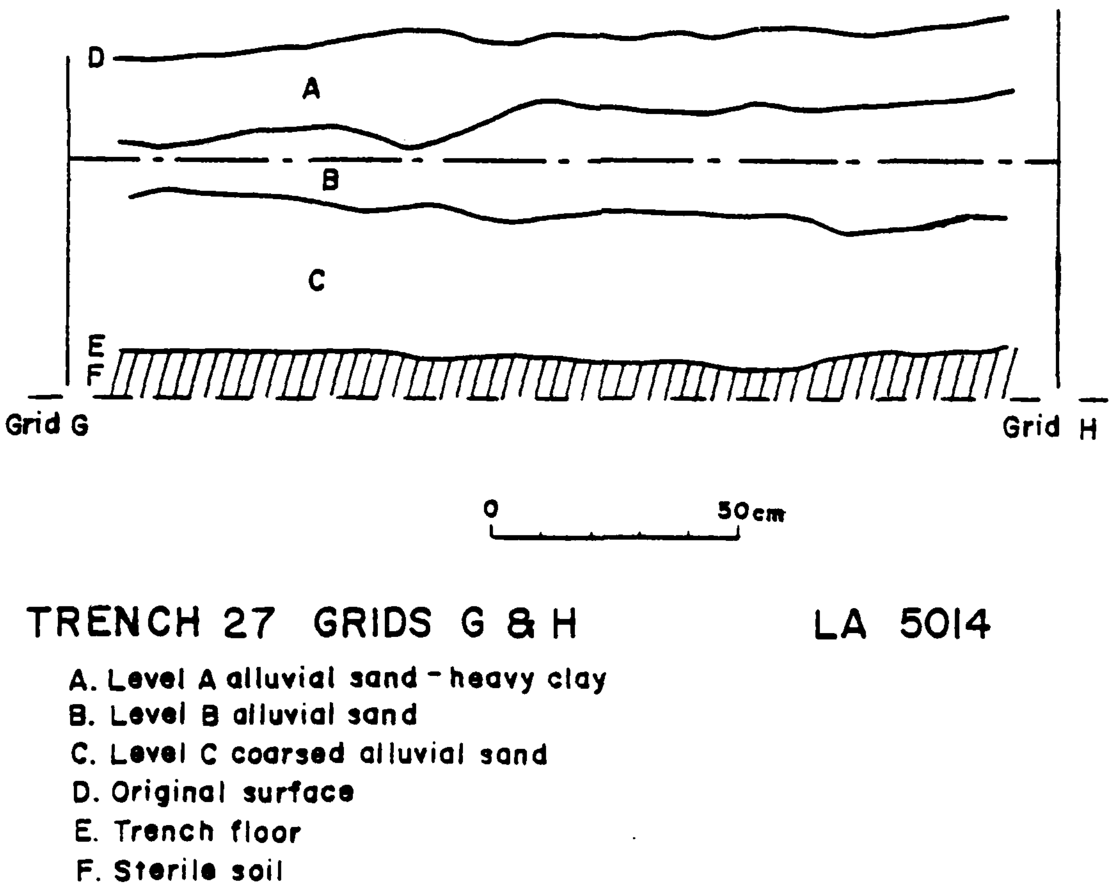


FIG. 3.3 LA 5014 Trench 27—profile between Grids G and H

Each room was assigned a feature number according to the order in which it was dug. Initially, test pits were dug to find the floor. The intention was to then determine what constitutes general fill, floor fill, and floor contact and peel off the designated layers. As fate would have it, this technique was not applicable to the situation. In almost all cases, the floors had completely eroded away. It was found that the original floor surfaces had been a mere five to ten centimeters below the present ground surface. This was determined by the presence of floor features and their stratigraphic placement in the rooms. When this problem became apparent, rooms were excavated by carefully sweeping down and scraping the entire surface. We were rewarded with the bottoms of fire pits and in two cases small fragments of the floor were cleared. In rooms which did not have floor features, floor was defined by the last level stratum of artifacts. Test pits and trenches were excavated in all of the rooms for control. Sterile was located in all sections of the site, but due to time limitations, some of the testing was limited to merely defining the floor or living surface in the manner described. In all cases, artifacts were bagged in ten centimeter levels as obsidian was found in all levels down to sterile.

Trenching through the rows of basalt clasts in some cases revealed an adobe base for the vertical clasts. This adobe had probably been poured around the clasts after their placement in a trench. In most cases, however, the adobe was absent and no evidence of walls could be found below the basalt clasts.

Pollen and flotation samples were taken from the floors and hearths. Because of the eroded condition of some of the floors and their proximity to the surface, pollen samples were not taken in some cases. In the case of rooms with identifiable floors, pollen samples were taken from the surface down to sterile in 10cm levels. A block of fill was always left in one corner for this purpose.

Testing south of the roomblocks revealed two subterranean kivas. Each was situated in a position approximating the midway point of their respective roomblocks. The eastern kiva designated as Feature 6, was completely excavated. Initially, a quarter of the structure was taken down to floor level. As the depth of this feature afforded an opportunity to establish a long-range pollen curve, samples were taken at five centimeter intervals from the surface.

It had been noticed that the artifact density had steadily decreased as we approached floor level. Because of this observation, the remainder of the fill was shoveled out in twenty centimeter levels to determine if such a change in frequency did actually occur.

The western kiva was only partially excavated due to time limitations. A trench was dug to floor level and the fire pit and one wall were exposed. Pollen samples were taken and the trench was backfilled.

A circular pit feature attached to the southeastern corner of the western roomblock was also excavated. A quarter of the structure was initially excavated and the stratigraphy recorded. Pollen and soil samples were taken from each defineable strata. Then the remainder of the room was taken down to floor. Pollen and flotation samples were taken from the floors of each of these subterranean features.

Architecture

Eighteen features were defined in all. Feature 4 was an unsuccessful test pit on the south side of the roomblocks where we thought there were surface indications of a kiva. This feature was pronounced defunct and will not be further considered here. Feature 18 was the surface of a large basalt boulder adjacent to the southwestern corner of the western roomblock. It was assigned a feature number in order to collect the sherd and lithic scatter on its surface. This area was collected so that it could be used for back dirt from the surrounding features.

Of the remaining 16 features, three are subterranean, one is an isolated slab-lined hearth, eleven are surface rooms, and the last is a section of plaza which was excavated while defining room features. In terms of basic construction the surface rooms may be considered as a whole.

In all of the surface rooms, basalt clasts were set vertically as a base for coursed adobe walls. It is probable that trenches were dug for these foundation stones, although there was no positive evidence of such trenching. Adobe footings for the vertical clasts were discovered by trenching in Features 8, 11 and 14. This adobe extended from the midway point of the vertical clasts downward for 10cm to 15cm to a point from two to five centimeters below the base of the basalt clasts. On a horizontal plane, the adobe extended from five to ten centimeters on either side of the vertical clasts. The surface formed by this adobe was on a plane with the floor level as estimated by floor features and the vertical distribution of artifacts. From this, one can assume that the clasts were either set in trenches and the adobe was poured in around them or the adobe was poured and the clasts were inserted while the adobe was still plastic.

Evidently, a rather specific height and width were required for the basalt foundation. Clasts averaged 20.6cm in height and 16.5cm in width. In situations where a single clast could not be found to meet the qualifications, several clasts would either be stacked horizontally or set vertically side-by-side to achieve the necessary dimensions. To clarify this further, it should be mentioned that the clasts in the north, south, and east walls of Feature 10 were placed side-by-side along the long axis with a space of from 5cm to 10cm between them. This is a standard foundation technique for puddled adobe walls. However, this system did not appear elsewhere in the pueblo. Perhaps the fact that Feature 10 was by far the largest room in the pueblo required this variance in construction. The other exception to the rule occurred in the east wall of Feature 5 and the north wall of Feature 14. There, the individual clasts were set with their narrowest edge facing into the room. The adobe bases which held the vertical clasts in place indicate that the actual adobe walls averaged 26.5cm in width.

The rooms were all rectangular with their long axes oriented east-west. The dimensions of the smallest room were 2.65m by 2.25m (Feature 11) and the largest room was 3.70m by 3.05m (Feature 10). The average size of the eleven rooms excavated was 3.14m by 2.36m.

Of the eastern roomblock, portions of the floor were preserved only in Feature 8. Three fragments, each averaging 15cm in diameter, were discovered in the western half of the room. They were 3cm thick and were constructed of plastered adobe. As in Feature 14, a strip of adobe extended along the south wall for a distance of

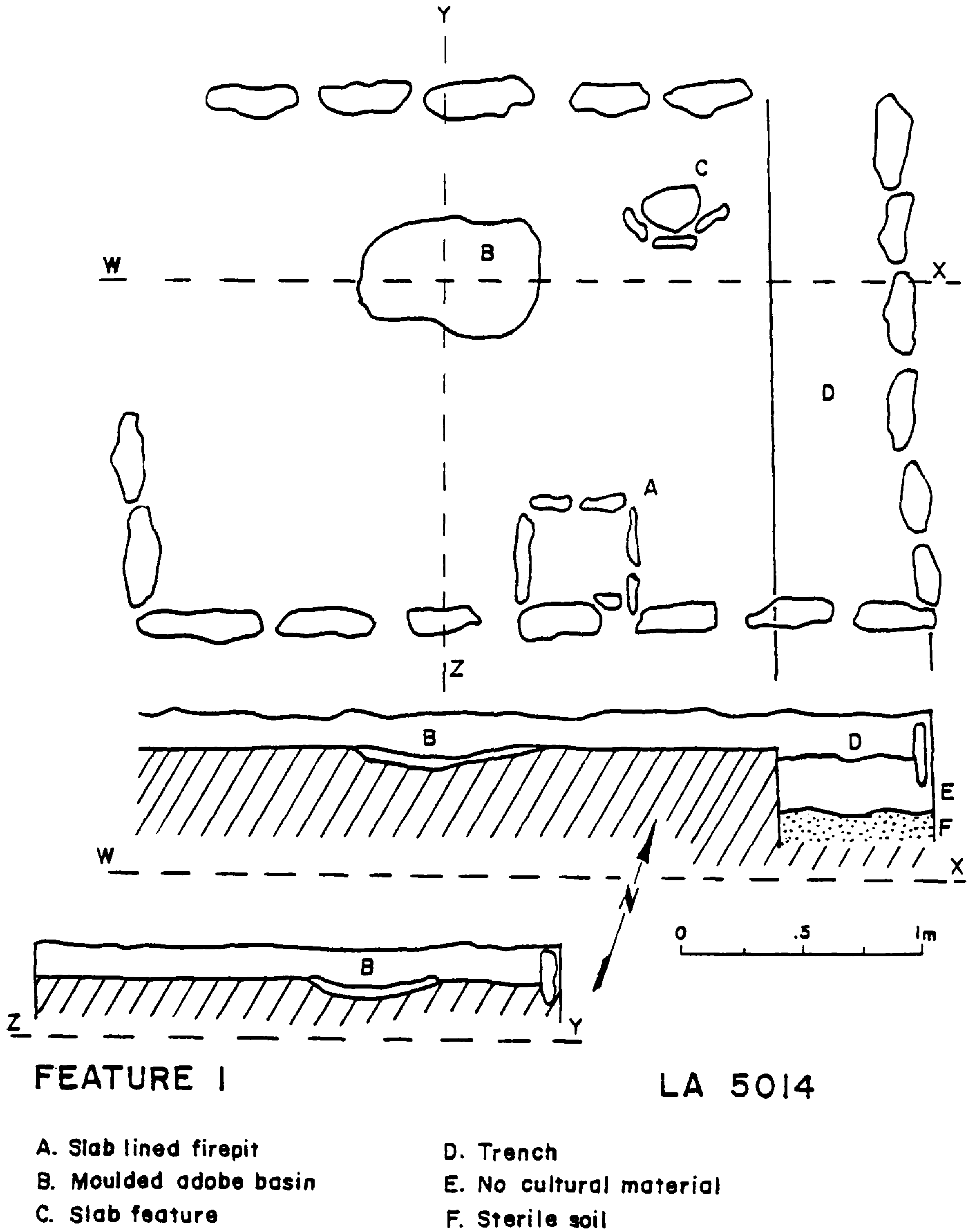


FIG. 3.4 LA 5014 Feature 1, plan view and cross sections

80cm. This strip had an average width of 5cm. Trenching showed it to be a section of the adobe base for the basalt footings. It was from 10cm to 15cm in depth but its surface was on the same horizontal plane as the existing floor fragments.

Hearths

The hearths varied widely in both location and construction and thus merit individual attention.

Two hearths were present in the eastern roomblock. These were in Features 1 and 8. The hearth in Feature 1 was located against the south wall. It was rectangular and constructed of vertical basalt slabs. The vertical basalt clasts which made up the south wall of Feature 1 were incorporated as the southern wall of the hearth. Two additional slabs averaging two centimeters in thickness lined the bottom. Interior measurements for the hearth were 47cm by 37cm with the long axis oriented north-south. The vertical slabs had evidently been inserted in the floor. Unfortunately, the floor was completely eroded. The hearth in Feature 8 was situated near the center of the room. Of adobe construction, it was almost exactly circular, with a diameter of 42cm. However, because of erosion only the bottom 10cm remained. Any lip or moulding which may once have been there had been destroyed. A single triangular slab of basalt had been placed in the bottom.

In the western roomblock only three of the eight excavated rooms contained hearths, and one of these is questionable.

Excavations in Feature 12 revealed a circular ash stain with a triangular slab set in it. The stain was 34cm by 25cm and was no more than 2cm thick. Evidently the entire pit had been washed away. The ash stain was only 10cm below the present day ground surface.

Feature 15 had two such circular ash stains, one at the 10cm level and one at the 20cm level. The ash layer in both cases averaged 2cm to 5cm thick. The upper ash stain measured 50cm by 30cm, while the lower one measured 25cm by 25cm. Whether these were actually the remnants of hearths is questionable. There were few fragments of fired adobe in the room feature and both ash lenses lacked the horizontal slabs which characterize the other hearths.

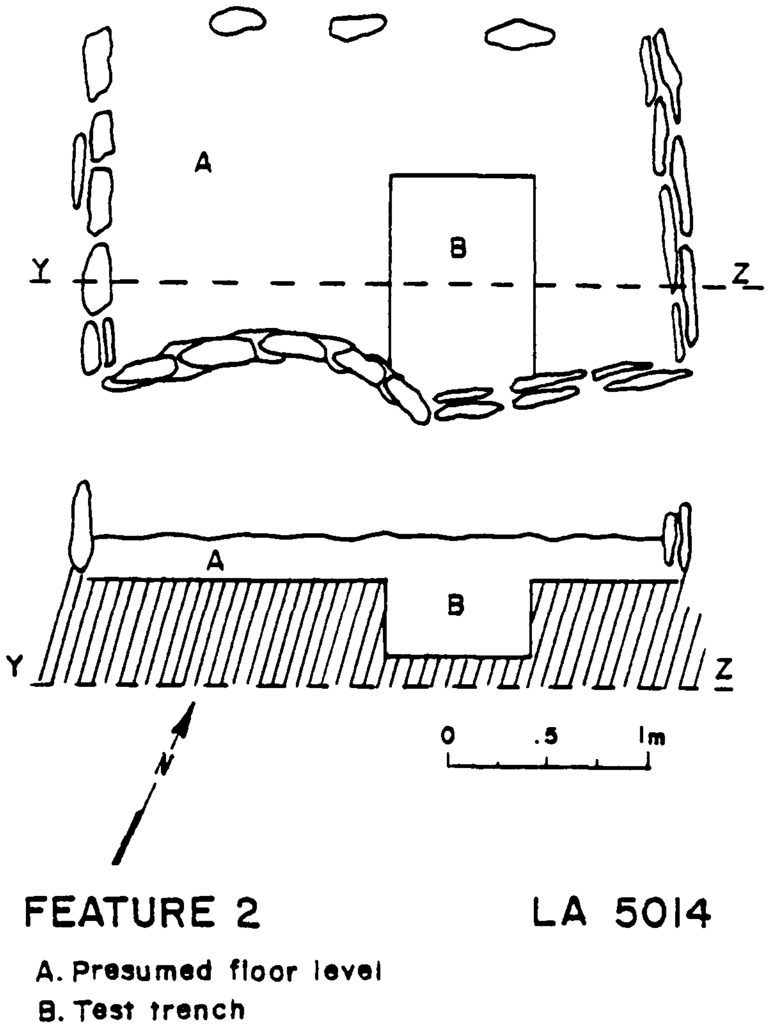


FIG. 3.5 LA 5014 Feature 2, plan view and cross section

The hearth in Feature 14 was situated near the center of the room and was unique in that it was constructed of both slabs and adobe. It measured 53cm by 54cm. The south and east rims were constructed of basalt slabs and were set at a 90 degree angle to each other. The west and north rims were formed by a rounded adobe rim which curved continuously to meet the south and east rims. The bottom was lined with three basalt slabs.

The isolated slab hearth (Feature 13) is considered to be later than the occupation of LA 5014. As no artifacts were recovered from its fill we cannot be certain, but the flotation samples analyzed displayed a superior state of preservation when compared to those taken from the pueblo proper. The preservation is similar to those samples analyzed from LA 5013, an adjacent historic period site.

In Features 2 and 12 a portion of the southern walls was curved. This was a result of their contiguity with Feature 9, which was a circular pit structure joined to the western roomblock. These curved walls were not constructed of single vertical clasts, but rather of unshaped, mortared, horizontal clasts stacked two deep.

The western roomblock possessed a common center wall which ran from east to west. Rooms were built contiguously on either side with their partition walls abutting this common wall. This wall was terminated on the eastern side by Features 2 and 12, which, although they were contiguous with the southern line of rooms, did not possess northern walls. There were four rooms on the northern side of the common wall and six, possibly seven, on the southern side.

Several large boulders of fine-grained basalt lie immediately to the southwest of the western roomblock. These mark the beginning of the basalt ridge and effectively block off the western side of the plane. On one of these boulders were two petroglyphs, an anthropormorph and serpent figure.

The eastern roomblock consisted of three contiguous rooms. They share common north and south walls. Each

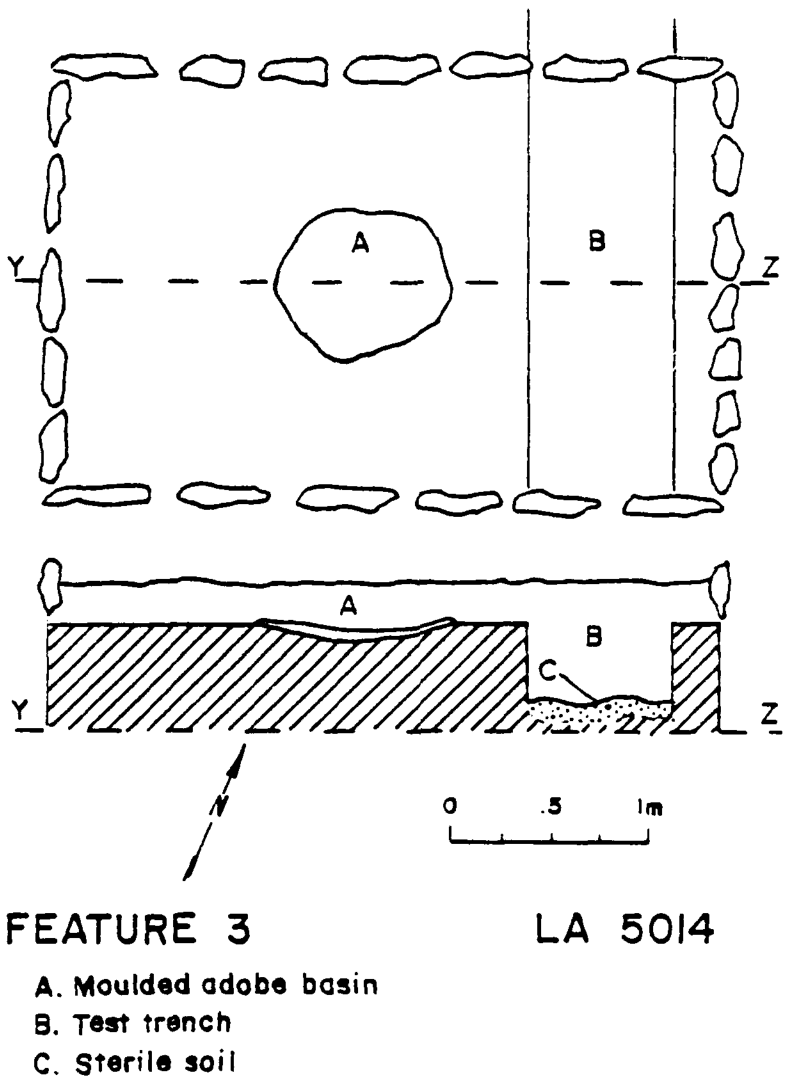


FIG. 3.6 LA 5014 Feature 3, plan view and cross section

partition wall abutted the longer north and south walls. An additional wall joined the eastern wall of the roomblock and ran south for the distance of one meter. However, it did not connect to any other existing walls. The presence of a large juniper tree and lack of time prevented further investigation.

An additional line of basalt clasts was found six meters to the east of the eastern roomblock. This "wall," oriented at 30 degrees west of north, connected several large bounders and was 18.3 meters long. It terminated on the south in the profusion of boulders which make up the basalt ridge. A large basalt boulder directly east of the eastern roomblock marked the north end of the "wall." The term wall is used with some caution because, although the clasts were in alignment, none were stacked.

Due to the eroded state of the rooms, positive evidence of entrances was not found. In the western roomblock, Features 2 and 12 lacked north walls and the south wall was missing in Feature 15. The other features of this roomblock gave no indications of ground level entrances.

In the eastern roomblock, the basalt foundation stones were absent for an average space of 60cm on the eastern side of the north walls of Features 1, 7 and 5. Whether or not these are entrances is open to speculation but the consistency of this gap in the three contiguous rooms makes it seem probable.

Room Floors

As previously mentioned, the floors were badly eroded. In the western roomblock, only Feature 14 contained a remnant of the floor. This remnant was constructed of plastered adobe and had been protected by its proximity to the slab lined hearth. It averaged 3cm thick and had been placed directly on the sandy clay subsoil. An additional fragment of adobe surface was discovered adjacent to the south wall. It varied from 5cm to 10cm in width and extended along the wall for a distance of 75cm. It was undoubtedly the base for the basalt foundation, but as its surface was at the same level as the floor remnant found near the hearth, it may be assumed that it was also a section of the floor.

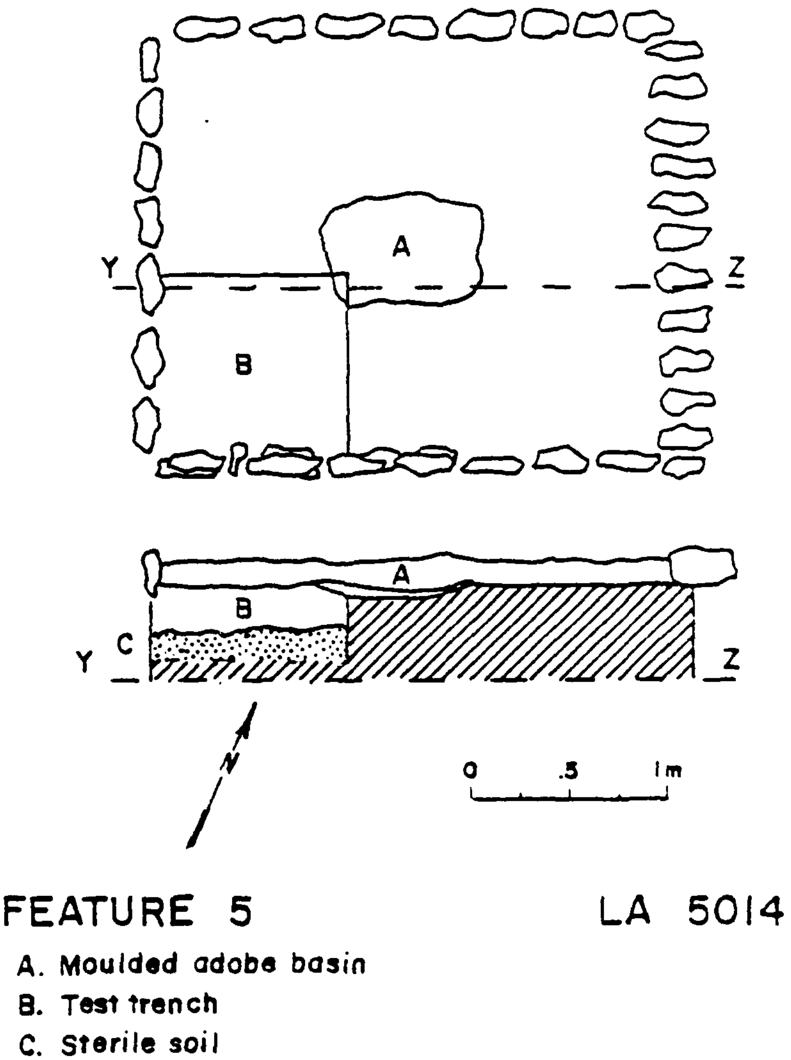


FIG. 3.7 LA 5014 Feature 5, plan view and cross section

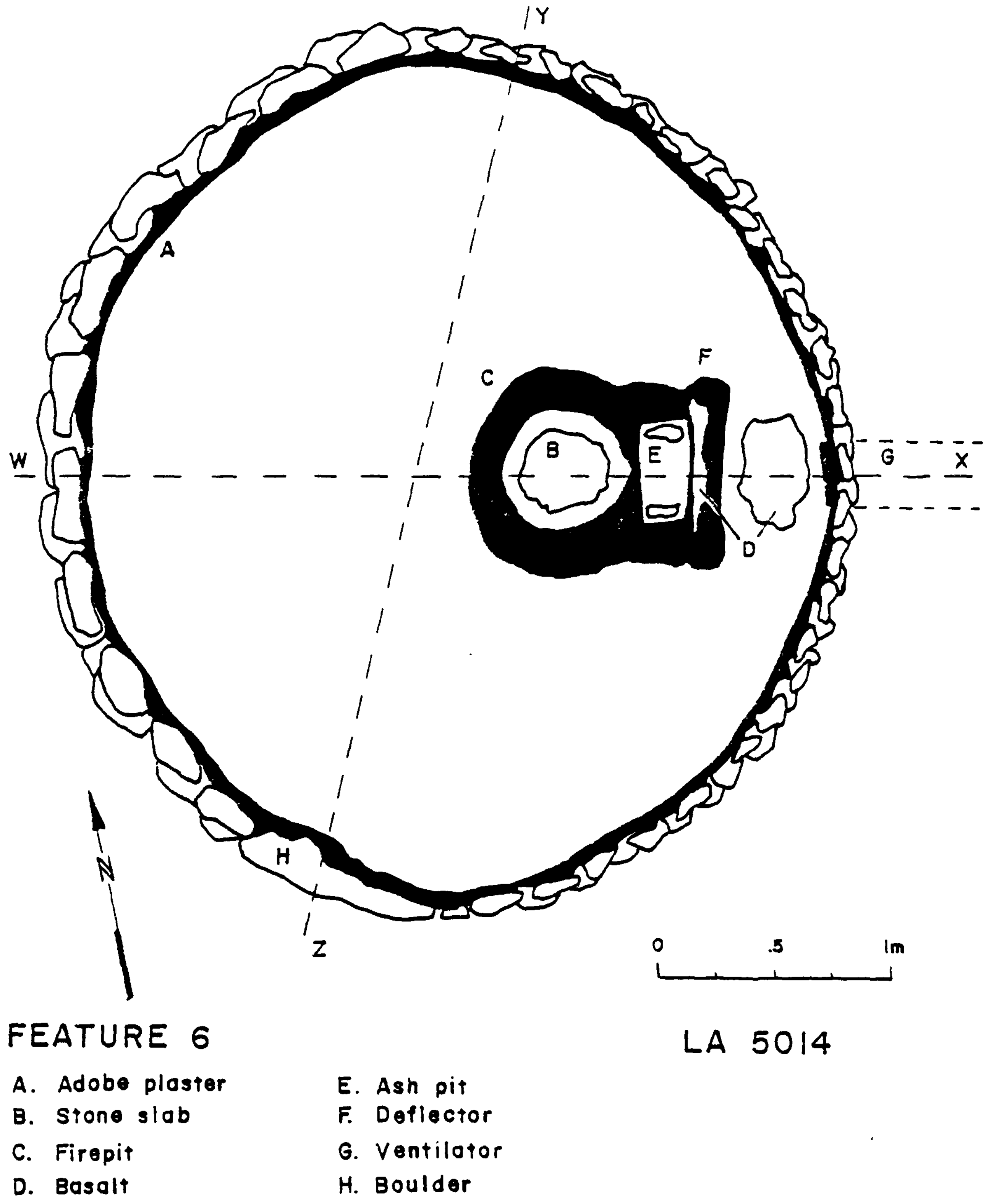


FIG. 3.8 LA 5014 Feature 6, plan view

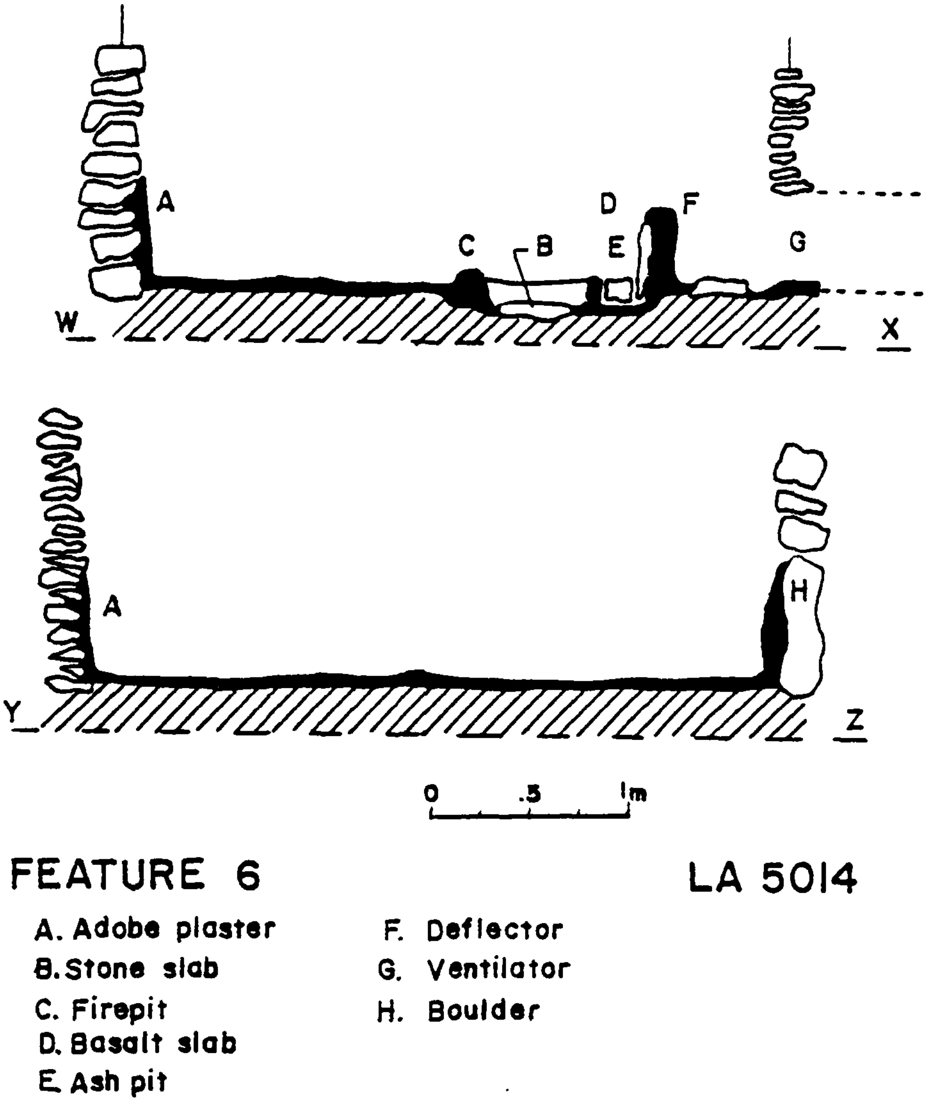


FIG. 3.9 LA 5014 Feature 6, cross sections

Other Features

One slab lined feature was found in Feature 1. This consisted of a single horizontal slab set below floor level. The slab measured 20cm by 18cm and was faced by three vertical slabs on the southern, southwestern, and southeastern sides. These slabs form a trapezoid which lacks its longest side. They supported two horizontal slabs stacked one upon the other. The supported slabs measured 22cm by 23cm and were roughly rectangular.

In Feature 1 of the eastern roomblock and in Features 3 and 5 of the western roomblock, patches of plastered adobe were found in the center of the rooms at the presumed floor level. Each was slightly concave and averaged 72cm in length and 53cm in width. All were oval in shape. In each case, their long axis was oriented with the long axis of the rooms. They will be referred to here as moulded adobe basins. The adobe rose slightly at all perimeters and then curved evenly down to meet the surrounding sandy clay soil. Trenching revealed the plaster to be from 3cm to 4cm thick.

1. Roof Construction

No direct evidence of roof construction was recovered. Several fragments of fired adobe were found in the fill of the various rooms, but none of these contained beam impressions. Any charred or uncharred beams which might have once been there had been washed away. No postholes were found.

2. Grid Features

Areas containing fragments of charcoal and associated ash stain were defined in Grid I28 at the 20cm to 30cm level and in adjoining Grids I31 and I32 at the 20cm to 40cm level. On the west wall of the north-south trench in Grids F27 and G27 the outline of a pit was defined. Beginning 25cm below the present ground surface this

pit extended downward another 72cm and into the sterile caliche and was 2.5m in diameter at the top. There was a heavy ash stain throughout the pit. Flotation samples were taken from each of these features.

3. **Subterranean Features**

Three subterranean features were excavated. Features 6 and 16 were kivas associated with, but not connected to the eastern and western roomblocks respectively. Feature 9 was a smaller kiva or pithouse connected architectually with the southeastern end of the western roomblock. Each will be discussed individually.

Feature 6

Feature 6 is associated with the eastern roomblock. It was completely excavated. It is slightly oval and was 3.26m by 3.70m with its long axis oriented north-south. The wall height varied from 1.25m to 1.30m and was from 14cm to 22cm in thickness.

The elements involved in the wall construction varied radically from the eastern to the western side of the kiva. The eastern wall was constructed of mortared basalt slabs ranging from 1.0cm to 10cm in thickness. The use of this type of wall element ended abruptly on the south end where a large basalt boulder measuring 80cm by 90cm had been incorporated into the wall. Evidently it had been found there during the initial construction and had been too much trouble to move. From this point on, the western half of the kiva was constructed of both basalt and pumice. These masonry elements were much coarser, with the individual elements ranging from 7cm to 14cm in thickness.

A large section of the northern wall had been pushed in by root action, making it impossible to determine where the two masonry styles had joined. Portions of both walls had been plastered with adobe. This plaster rose from the floor to a maximum height of 60cm. No additional wall features were found.

The floor had been constructed of packed clay averaging 4cm in thickness. It was extremely hard. It rose slightly to meet the walls and hearth complex. No postholes or sipapu were found.

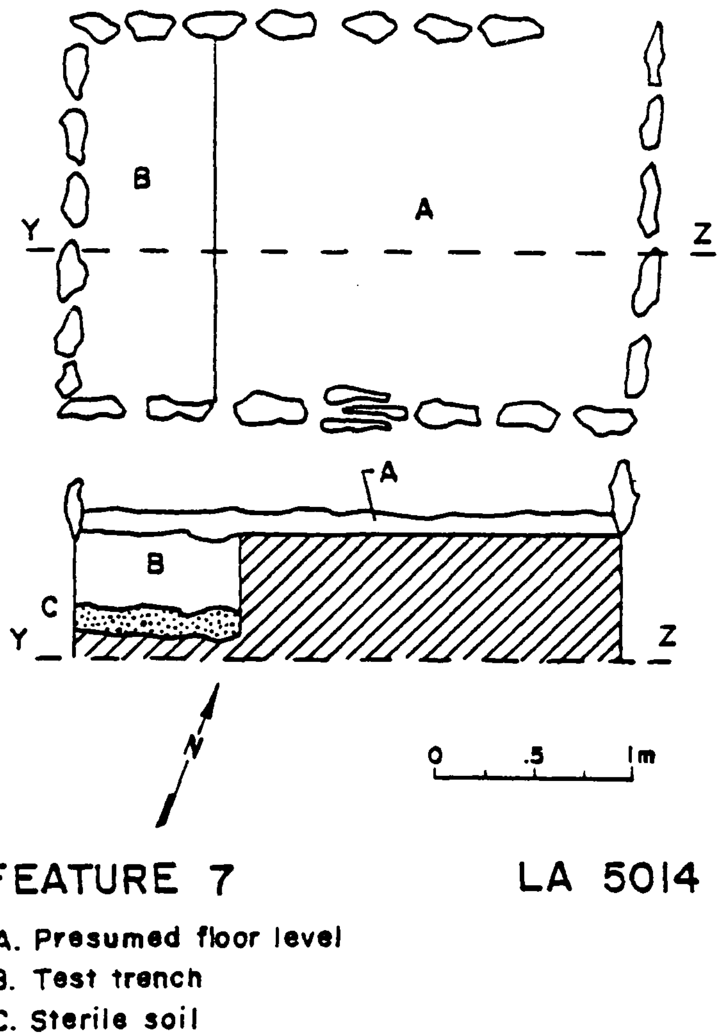


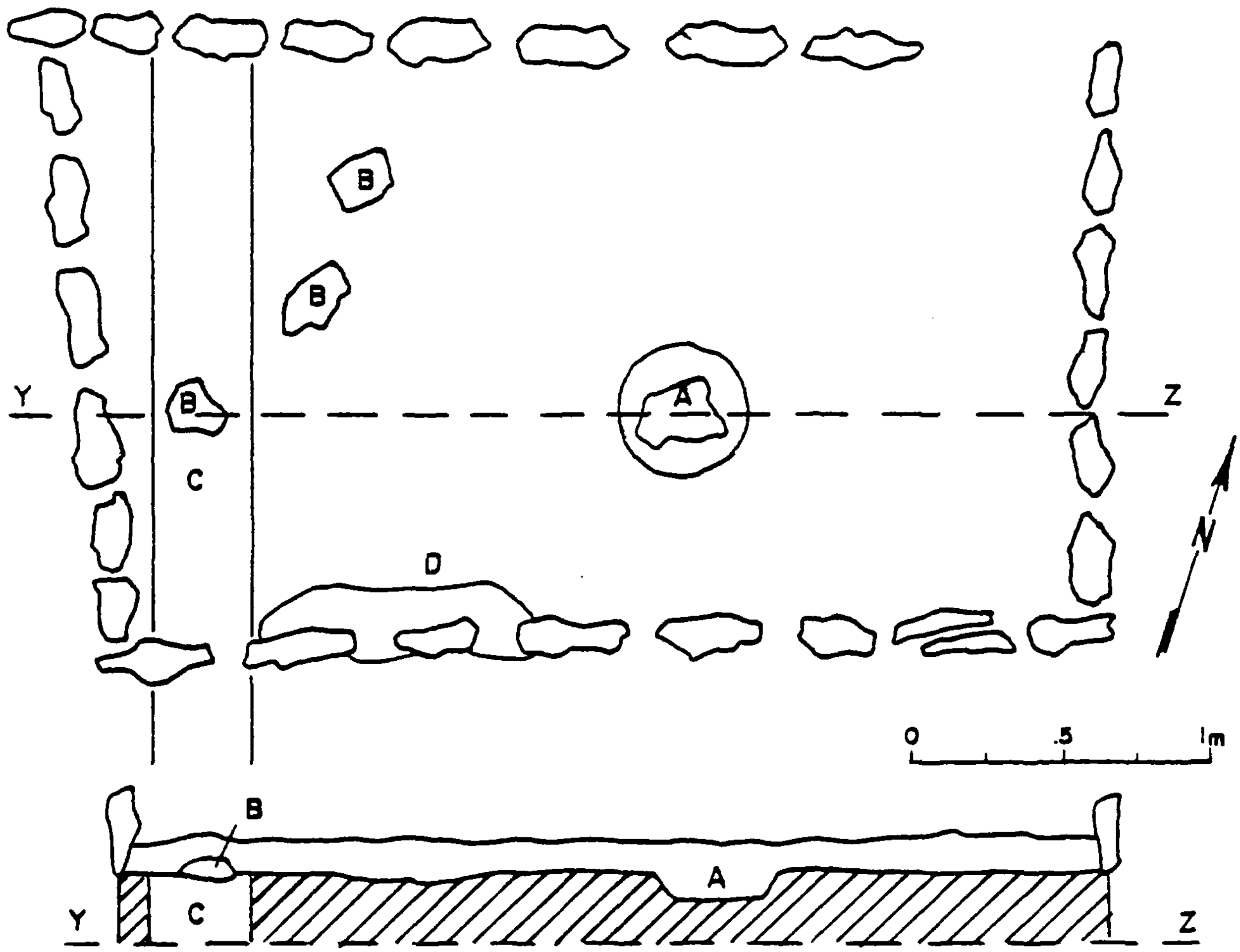
FIG. 3.10 LA 5014 Feature 7, plan view and cross section

The hearth, ash box, deflector, and ventilator complex was situated on the eastern side of the kiva with the long axis oriented 103 degrees east of true north. The walls of the hearth formed a rough rectangle with the interior sloped and smoothed to a circular form. Construction was of adobe and a large rectangular basalt slab had been placed in the bottom. The rim of the hearth varied in height from 6cm to 12cm and tapered from a width of 18cm at the bottom to 7cm at the top. The rim had been carefully smoothed and rounded off. The exterior diameter of the hearth averaged 70cm while the interior diameter averaged 56cm.

The firebox or ash box was rectangular with the deflector and hearth forming the east and west walls respectively. The north and south sides of the firebox were constructed of adobe with a lining or rectangular slabs. A larger rectangular slab lined the bottom. The firebox was 18cm wide and 40cm long. Depth was 11cm. The adobe rim tapered from 20cm at the bottom to 10cm at the top.

The deflector was constructed by moulding adobe around a large rectangular slab which faced the hearth. It was 80cm long and varied from 17cm to 34cm high and from 16cm to 18cm wide. The deflector was partially eroded and our measurements do not reflect its true height.

Situated behind the deflector, the bottom of the ventilator shaft was two centimeters above floor level. A rectangular slab was imbedded horizontally in the floor



FEATURE 8 LA 5014

A. Circular firepit bottom
B. Floor fragments
C. Test trench
D. Adobe base for basalt clasts

FIG. 3.11 LA 5014 Feature 8, plan view and cross section

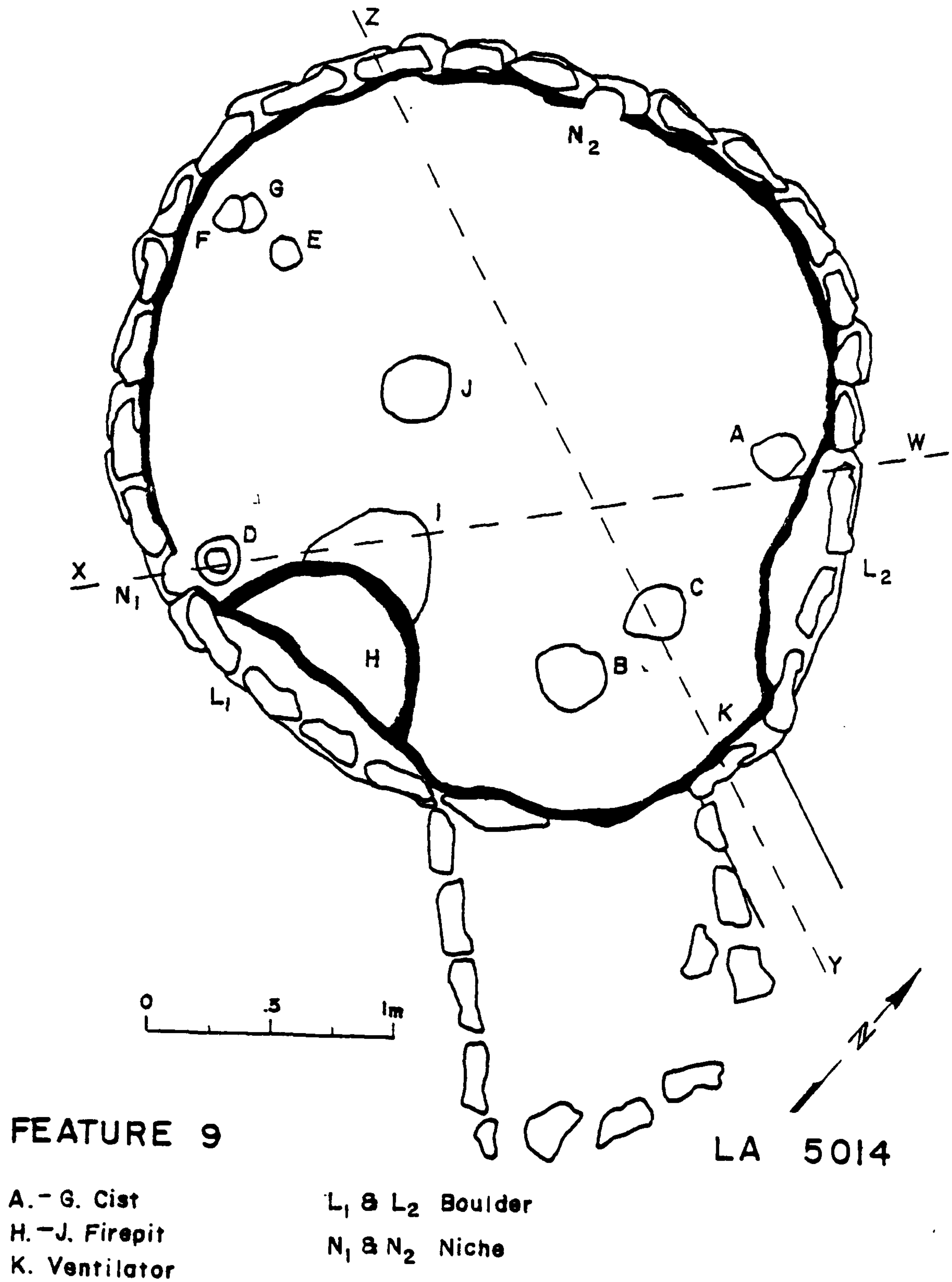


FIG. 3.12 LA 5014 Feature 9, plan view

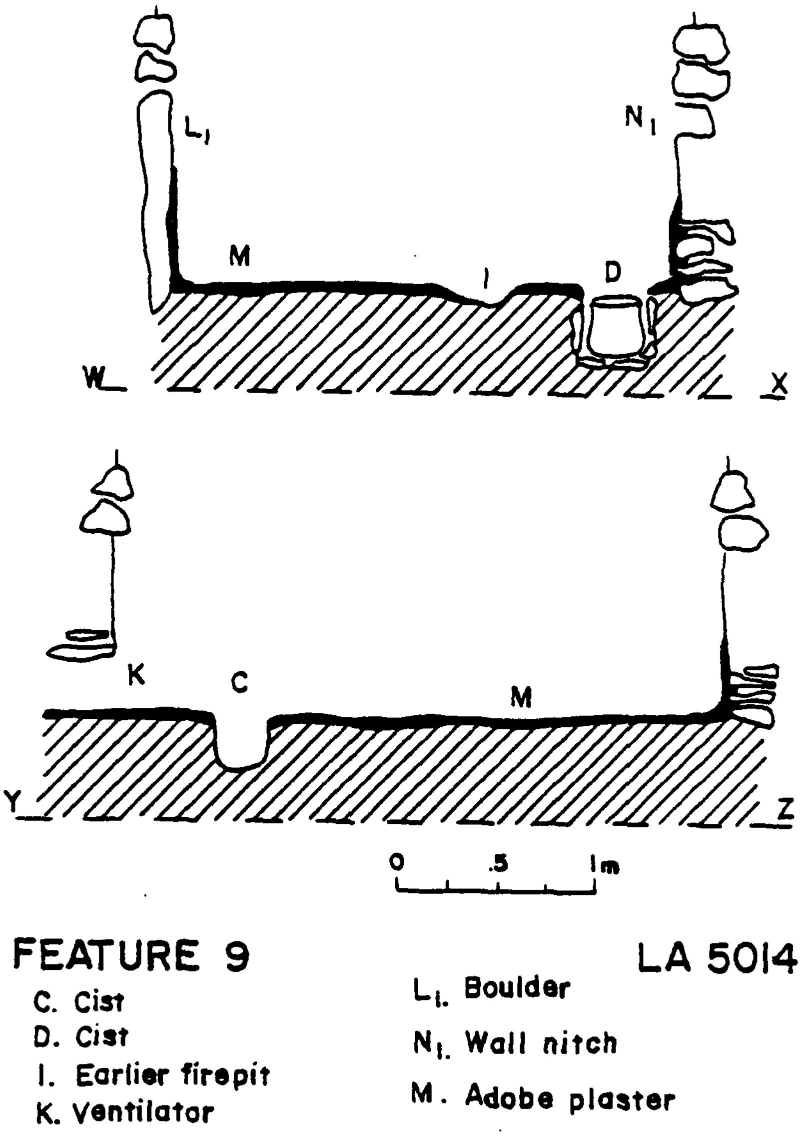


FIG. 3.13 LA 5014 Feature 9, cross sections

between the deflector and the ventilator opening. The ventilator opening itself was roughly rectangular and was 35cm wide and 27cm high.

A shaped pumice boulder was found in the fill. Circular, it measured 35cm in diameter and 12cm in thickness. It may have been used to shut off the ventilator opening although when this was attempted a gap from 2cm to 3cm was left.

Evidence of roof construction was found in the form of beam impressions from the roof adobe. These averaged 4.5cm in width. It is supposed from the relatively short diameter of the kiva that a flat roof had been constructed. A sufficient volume of potential building material was recovered from the fill to build a surface wall at least 86cm high.

Feature 16

Feature 16 was south of the western roomblock. Not completely excavated due to time limitations, a trench 60cm wide was dug to floor level. It was oriented 84 degrees east of north.

The hearth was located on the eastern side of the kiva and was partially exposed. Its long axis was oriented 116 degrees east of true north. The firebox and deflector were not exposed, but their presence is highly probable.

A section of the western wall was also exposed. The masonry construction was like that of the eastern wall of Feature 6. It consisted of mortared basalt slabs averaging 5cm in width and varying from 1.0cm to 10cm in width. The wall itself was 1.5m deep, terminating at

the bottom with a hard packed clay floor. Several clumps of adobe containing beam impressions were recovered. The beam impressions averaged four centimeters in width. Although the eastern wall was not exposed it is presumed from the location of the hearth that the kiva was approximately 4.1m in diameter, at least along the transect of the trench.

Feature 9

Feature 9 is a small subterranean structure attached to the southern walls of Features 2 and 12 of the western roomblock. It is circular and measures 2.90m along the north-south axis and 2.30m along the east-west axis.

The walls were 1.40m in depth. A surface wall was constructed of unshaped, mortared basalt stacked two deep. This wall was 20cm wide. For a space of 60cm below this wall, there was an absence of wall material. This portion had probably once been plastered but the plaster has eroded away. Below the vacant area occurred a 15cm wide band of 5cm-thick slabs which terminated with a series of 20cm-thick slabs and an occasional facing stone down to floor level. Portions of this last masonry level still displayed fragments of plaster. Two large boulders had been incorporated into the wall. One of these was in the southeastern corner while the other was in the southwestern corner. Together they had a narrowing effect on the southern portion of the structure.

Two niches were found in the wall. The first was 25cm north and west of the existing hearth. It was 46cm above the floor and was 16cm high and 14cm wide. The sides and bottom of this niche had been smoothed and

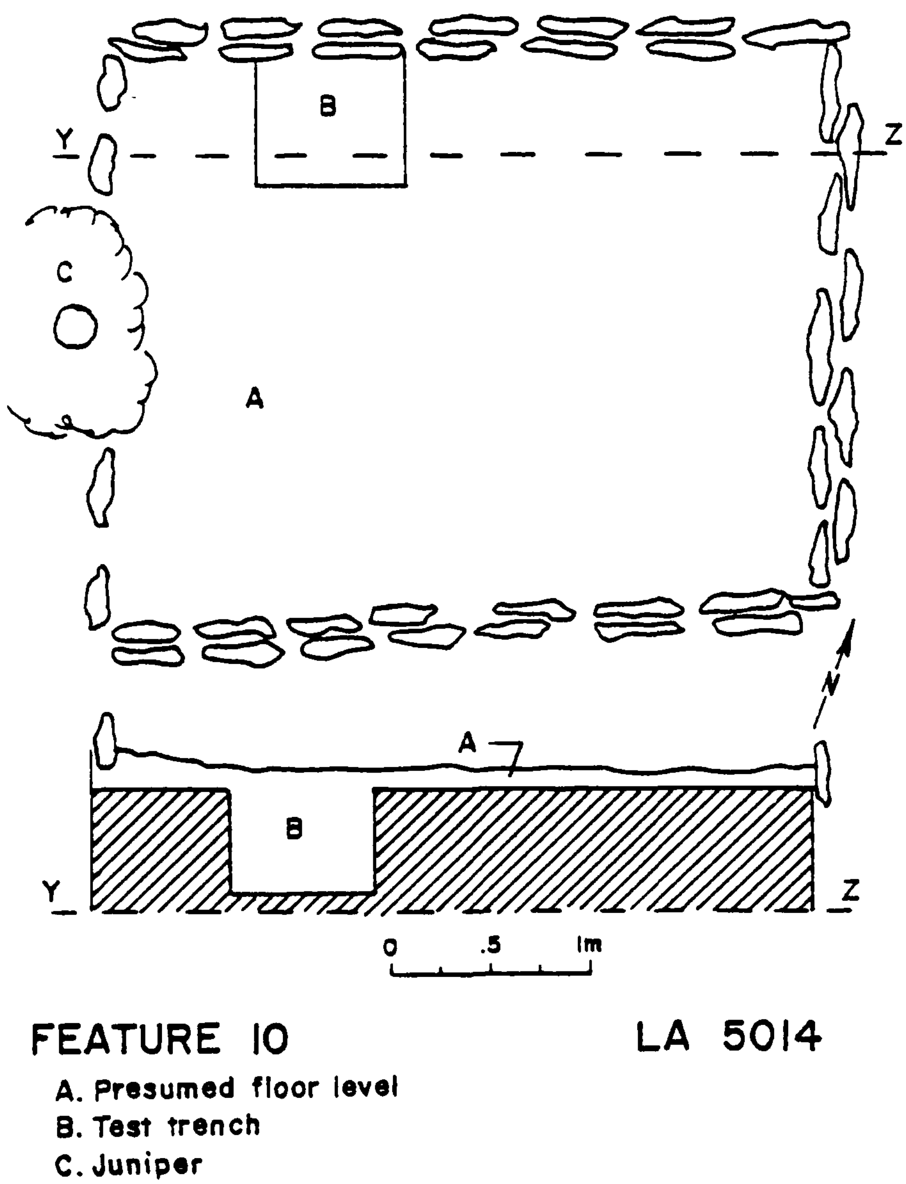


FIG. 3.14 LA 5014 Feature 10, plan view and cross section

rounded off. The second niche was 84cm above the floor and on the north side of the room. It was 11cm wide, 9cm high and 11cm deep.

The floor was extremely hard and was constructed of hard packed clay and adobe. Some areas displayed a shiny black surface which gave rise to the suspicion that it had been prepared with blood.

A hearth was set against the wall (boulder) in the southwestern corner of the room. It was 74cm long by 48cm wide, with its long axis running parallel to the wall. The rim was of adobe and varied in height from 7cm to 10cm and in width from 8cm to 12cm. Parts of the rim had been crushed by roof fall. There was no deflector. The base of the ventilator opening was at floor level 1.32m east of the hearth. It was 24cm high and 14cm wide.

Seven cists were found in the floor. All were nearly circular. They are best summarized in list form.

Cist	Diameter	Depth	Fill
A	22-25cm	27cm	Sherds from fragment vessel, lithics, bone
B	23-25cm	11cm	White ash
C	22-25cm	27cm	Charcoal fragments
D	17cm	23cm	Bottom lined with unshaped slab and two cobbles. Sides lined with unshaped basalt slabs. Contained small ceramic utility vessel.
E	13cm	7cm	Sand
F	9-12cm	8cm	Sand
G	10cm	3cm	Sand

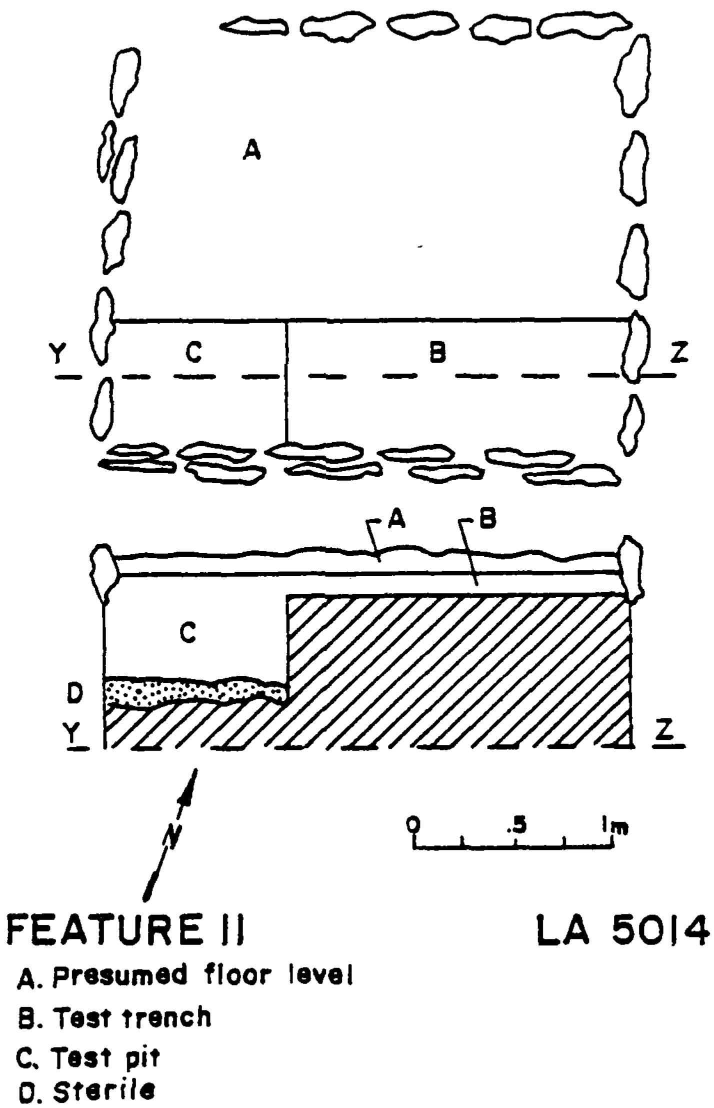


FIG. 3.15 LA 5014 Feature 11, plan view and cross section

Flotation and pollen samples were taken where feasible.

Testing below the floor revealed two additional hearths. Both had been destroyed and plastered over. This remodeling was probably due to experimentation to determine the most efficient method of ventilation without the use of the deflector.

One of these hearths was located near the center of the room and probably represented the first attempt. It was oval with a depth of 5cm and was 23cm to 29cm in diameter. The rim had been destroyed and the entire hearth was plastered over.

The other hearth was in the same location as the existing hearth although it had projected farther into the room. The rim had been removed to floor level and the existing hearth constructed partially over the previous one. The remaining area had been plastered over with adobe. This hearth was roughly circular, measuring 32cm in diameter and 6cm in depth.

A possible surface entrance or antechamber extended from the southern side of the structure. The masonry surface wall previously described departed from its circular pattern on the southwestern side of the structure and extended in a straight line for a distance of 1.35m. It then formed a right angle and ran east for a distance

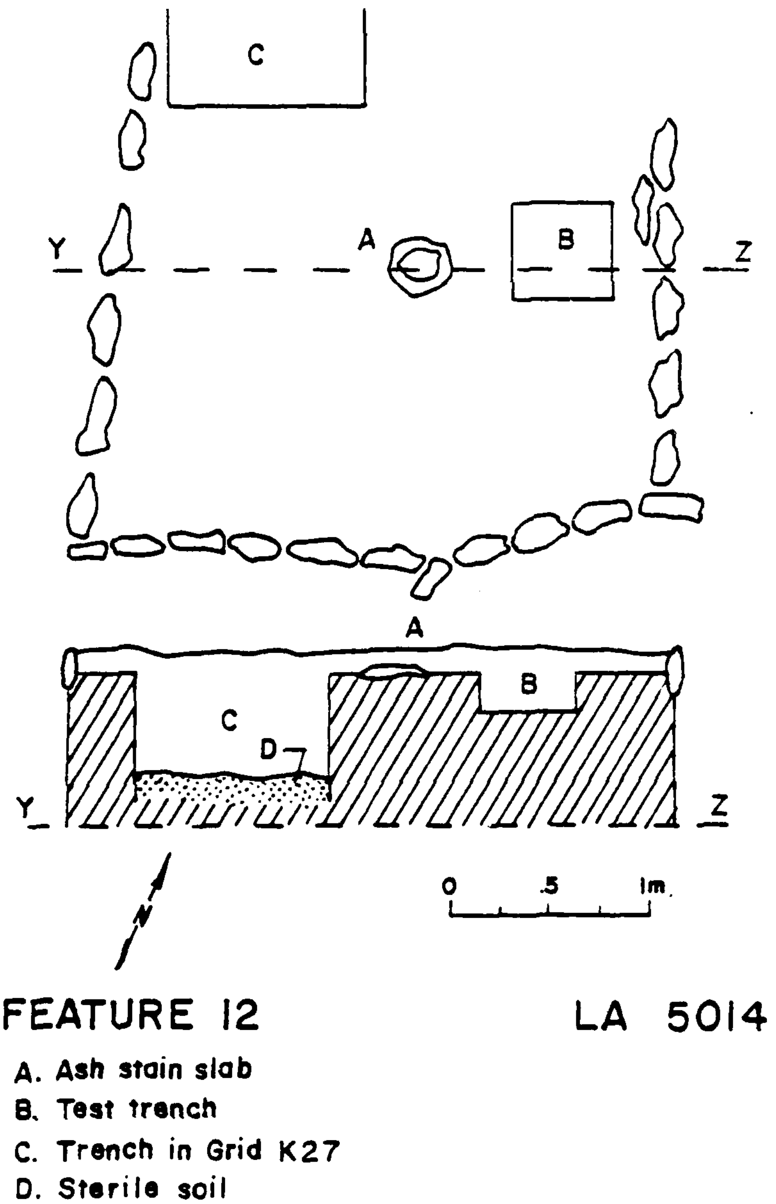


FIG. 3.16 LA 5014 Feature 12, plan view and cross section

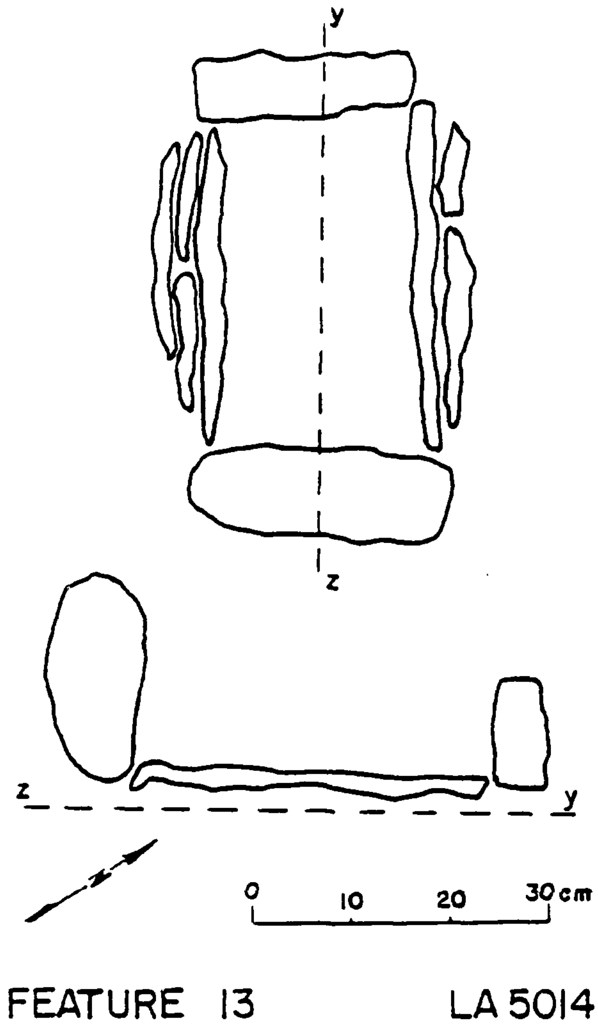


FIG. 3.17 LA 5014 Feature 13, plan view and cross section

of 1.2m, at which point it took another right angle and rejoined the circular wall on the eastern side of the structure. Sterile soil was located inside this rectangle at the depth of 42cm, although the wall construction was limited to the top 25cm. Fifty centimeters south of the southeastern corner of the rectangle were four basalt clasts which are thought to indicate the exterior ventilator opening.

It is possible that Feature 9 consisted of more than one story or that it was at least only semi-subterranean. A sufficient volume of basalt building material was recovered from the fill to have constructed a wall 60cm high around the circumference of the feature, including the southern recess. Although no evidence indicating the method of roof construction was recovered (beams or beam impressions, etc.), numerous large chunks of structural adobe were recovered from the fill. The largest piece of this adobe measured 20cm thick, 75cm long, and 63cm wide.

Ceramics

The paint-decorated ceramic assemblage of LA 5014 was dominated by Santa Fe Black-on-White (white slipped variety), intermixed with a limited quantity of the blue-gray slipped/floated variety. The high frequency of occurrence of the white slipped variety may indicate an early 13th Century occupation (see ceramic discussion of LA 12511, this report).

The four Santa Fe components at LA 6462, where stratigraphic isolation suggested an earlier horizon for the white slipped variety, were dated at A.D. 1280. These components produced a higher frequency of the blue-gray variety of Santa Fe Black-on-White.

The tree ring dates for both Wiyo Black-on-White and Galisteo Black-on-White cover a broad time span. Both are thought to be strongest between A.D. 1300 and A.D. 1400 (Breternitz 1966:76-104). However, at Salt Bush Pueblo limited quantities of both types are associated with a dominant Santa Fe Black-on-White ceramic assemblage. Archaeomagnetic and tree-ring dates suggest an ending date of A.D. 1250 for that site. Both types also occur in limited percentages in dated pre-A.D. 1300 deposits at Pindi Pueblo (Snow 1974:35). Thus a mid-13th Century date for their limited occurrence at LA 5014 would not be unusual.

The technological examination of the Galisteo Black-on-White sherds showed a minor quantity of andesite which may indicate manufacture within the Upper Rio Grande Valley as andesite temper was widely used in the Galisteo district during the Classic Period. However, these sherds may also represent trade pottery from the San Juan area as Galisteo Black-on-White is virtually indistinguishable from the Mesa Verde Black-on-White and McElmo Black-on-White ceramics of that district. The dates for McElmo Black-on-White range from *ca.* A.D. 1090 to A.D. 1275 while Mesa Verde Black-on-White is best dated as a tradeware from A.D. 1270 to A.D. 1340 (Breternitz 1966:84-85).

The single sherd of Tularosa Black-on-White is undoubtedly tradeware from west of the Rio Grande. This type is not well dated but is thought to be best as a trade product from ca. A.D. 1150 to A.D. 1300 (Breternitz 1966:98-99).

Given the variables discussed above, a mid-thirteenth century date (A.D. 1250-1270?) for the occupation of LA 5014 does not seem unreasonable.

TABLE 3.2

CERAMIC ASSEMBLAGE—LA 5014

Total Sherds	No.	%
Santa Fe B/W		
white slipped	362	22.47
blue-grey slipped/floated	115	7.13
Wiyo B/W	30	1.86
Galisteo B/W	8	.4
Tularosa B/W	1	.06
Corr./Smeared Indented	839	52.07
Plain/Body	256	15.89
	1611	99.88

Other clay artifacts:

Feature 6 Fragments of one conical shaped pipe (temper is identical to that of the utility ware). The specimen, being virtually complete, exhibits a tubular mouthpiece, which is common to the Developmental and Coalition Periods (Wendorf & Reed 1955:Fig. 2., p. 136).

Feature 9 Quadrangular shaped sherd (Wiyo Black-on-White) worked on three sides. Striae were present (most running perpendicular to the longest edge) on the exterior, undecorated surface. Measurement - 6.2mm x 5.2mm.

Fragments of a ceramic pipe. Form and mouthpiece were undeterminable however the paste is similar to the pipe found in Feature 6.

Complete jar, Corrugated/Smeared Indented with a pinched and slightly everted rim. Maximum height, 13cm; maximum exterior diameter, 14.5cm; interior diameter of orifice, 12cm.

Feature 15 Two quadrangular shaped sherds, both are Santa Fe Black-on-White (white slipped), each with one worked side. Striae evident only on worked edge.

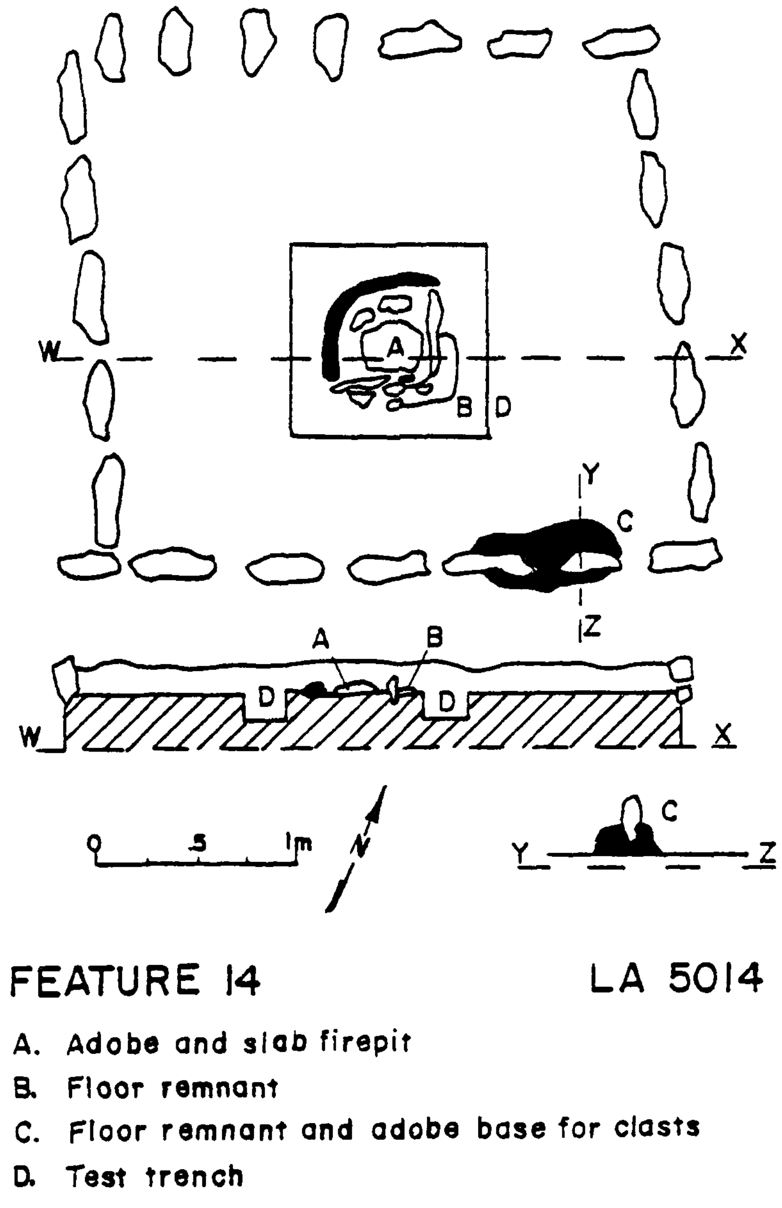


FIG. 3.18 LA 5014 Feature 14, plan view and cross section

Lithics

As part of an attempt to determine room function, only those lithics in good context (i.e. floor fill) were analyzed. Due to the shallowness of the surface rooms, the analysis included more than 75% of the lithics recovered.

Obsidian made up 67.8% of the lithic material. The remainder of the assemblage was rounded out by almost equal amounts of basalt (12.8%), chalcedony (9.6%), and chert (9.1%), with minute quantities of rhyolite (0.5%) and quartzite (0.1%). The cortex present on these materials was waterworn with the exception of a small amount of the obsidian and three basalt flakes. Six flakes and one unmodified obsidian nodule without waterworn cortex were recovered from four distinct proveniences. Basalt is common throughout White Rock Canyon. Obsidian, though not as common, can be gathered from the mesas on either side of the canyon. Small fragments are also weathering out of the Otowi pumice at the top of the cliff (Warren 1977). Thus it would seem that the inhabitants of LA 5014 were gathering the majority of their material from the river bed and nearby alluvial deposits, supplementing the supply with occasional nodules eroding out of the canyon walls.

The amounts of cortex present in the assemblage allows the inference that cores were processed almost entirely on the site. With the exception of the obsidian, the major focus of the reduction process at LA 5014 was the manufacture of simple flake tools. Obsidian, probably due to its extreme workability in comparison to the other material types, was the preferred material for utilization in the manufacture of bifaces. Flakes believed to have been formed by pressure were found in association with three distinct obsidian reduction assemblages.

Of the flake tools in the assemblage, thirteen exhibited

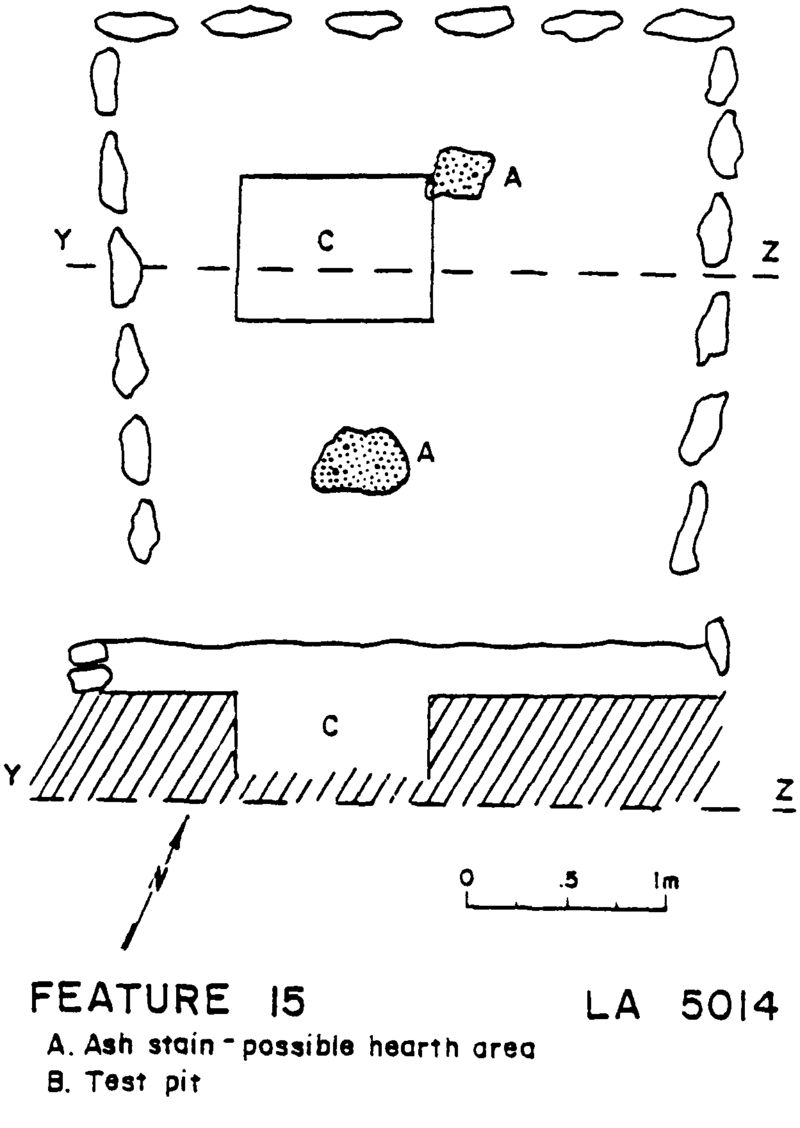


FIG. 3.19 LA 5014 Feature 15, plan view and cross section

scraping wear, five exhibited cutting wear, one exhibited wear patterns ascribed to both scraping and engraving, and three exhibited sawing wear. These will be discussed further in the section on room function. Sixteen of the twenty-two flake tools utilized cortex as backing while two exhibited what may have been intentional backing in the form of transverse flake removal.

Bifaces occurred in the form of four obsidian and one chalcedony projectile points. All were sidenotched and not more than thirty-two millimeters in length. The only additional intentionally-formed lithic tool recovered would be typologically referred to as an end scraper. Manufactured from a dense pink chert, the material is considered an exotic. As no debitage of this material was recovered, the end scraper is thought to be an intrusive to the site. Furthermore it exhibits pot lid fractures and a lustre on the flake scars, an indication of heat treatment (Crabtree and Butler 1964:cf.). Evidence of heat treatment was not found elsewhere in the assemblage.

Two quartzite hammerstones were recovered. Both are believed to have been utilized in the lithic reduction process. However, only one was associated with a reduction assemblage. One basalt cobble displaying battering on all ridges was also recovered.

A total of fifteen specimens of ground stone were recovered. Of these, seven are slab metates or fragments of slab metates. All are of vesicular basalt with one exception, which is rhyolite. Striations all ran parallel to the long axis. One specimen of basalt was a fragment of a basin metate. Four were manos of vesicular basalt which had been intentionally shaped by percussion and/or grinding into a rectangular form. These are slightly convex or flat in transverse cross-section, and flat in longitudinal cross-section. Two were wedge-shaped in cross-section. The remainder are problematical specimens. One is a granite river cobble which displays battering on one edge. Two are unshaped cobbles of sandstone and rhyolite respectively which exhibit unifacial polishing. The

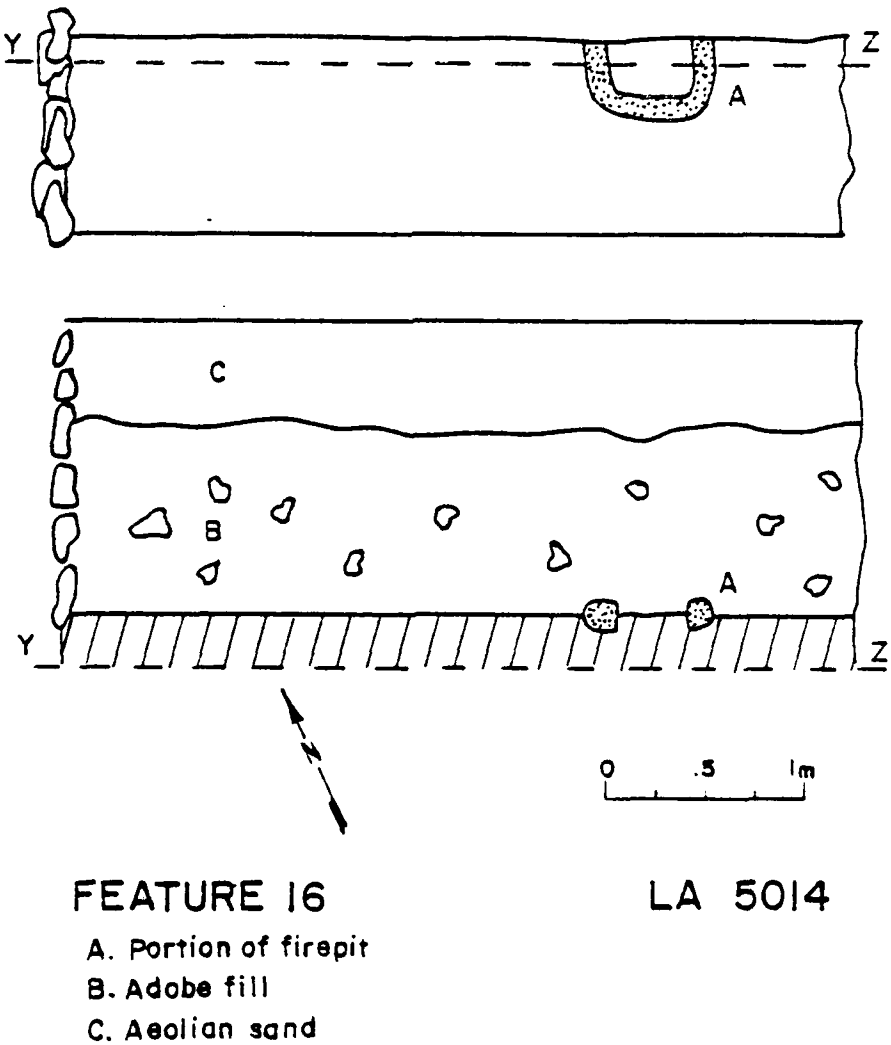


FIG. 3.20 LA 5014 Feature 16, plan view and cross section

last is a circular sandstone with grinding on one flat surface and an oval backing formed by pecking on the other surface.

Two chipped axes were recovered. One was granite and the other basalt. Both were sidenotched by percussion. Only the granite specimen displayed wear in the form of battering on both ends. "Chipped" axes are common throughout the Rio Grande pueblo sequence even through they were partially replaced by grooved axes around A.D. 1325 (Wendorf 1953:73; Wendorf and Reed 1954:145; Stubbs and Stallings 1953:106-109).

Utilized Lithic Material

(All measurements are in millimeters unless otherwise designated. L, W and Th mean Length, Width and Thickness.)

Feature 1

Projectile Points

Red tinged obsidian— Adjusted L-12, W-11, Th-3; corner notched basal fragment.

Chalcedony— L-21, W-12, Th-13; side notched complete point, no observable wear.

Ground Stone

Sandstone— Weight- 42 grams; unifacially polished surface.

Feature 2

Scraping

Basalt— L-54, W-42, Th-13; unifacial microflake removal on concave-convex edge; polishing on high points; backing formed by two transverse fractures.

Feature 3

Scraping - Engraving

Obsidian— L-42, W-20, Th-28; bifacial microflake removal on straight edge; rounding on adjoining acuminate; no backing.

Cutting

Chalcedony— L-65, W-47, Th-28; microflake removal on convex edge; cortex backing.

Chalcedony — L-34, W-25, Th-4; microflake removal on convex edge; cortex backing.

Feature 5

Scraping

Chalcedony — L-40, W-25, Th-15; striae and rounding on one convex edge; no backing.

Ground Stone

Basalt— L-35, W-22, Th-4; unifacial polishing (no pecking) of rectangular fragment, striations parallel to long axis, three edges exhibit battering.

Feature 6

Ground Stone

Rhyolite— L-250, W-120, Th-40; rectangular mano exhibiting pecking on both faces with striae parallel to short axis, all edges shaped by percussion.

Feature 7

Sawing

Obsidian— L-41, W-22, Th-12; bifacial microflake removal and polish on convex edge; cortex backing.

Obsidian— L-32, W-15, Th-10; bifacial microflake removal on convex edge; backing formed by transverse fracture.

Cutting

Obsidian— L-33, W-17, Th-9; bifacial microflake removal on concave edge; no backing.

Obsidian— L-28, W-15, Th-8; bifacial microflake removal and polishing on convex edge; no backing.

Scraping

Obsidian— L-27, W-27, Th-9; bifacial microflake removal on convex edge; cortex backing.

Projectile Point

Obsidian— L-26, W-24, Th-6; side notched basal fragment.

Obsidian— L-32, W-18, Th-5; distal fragment.

End Scraper

Exotic chert— L-50, W-22, Th-7; exhibits polish and unifacial microflake removal on three sides (heat treatment indicated by lustre on flake scars and pot lid fracture).

Feature 8

Hammerstone

Quartzite— Weight- 149 grams; exhibits battering on one end and side.

Projectile Point

Obsidian — Adjusted L-20, W-18, Th-5; side notched basal fragment.

Scraping

Obsidian— L-42, W-30, Th-15; unifacial microflake removal on convex edge; cortex backing.

Obsidian— L-35, W-25, Th-12; bifacial microflake removal on concave edge; cortex backing.

Sawing

Basalt— L-74, W-24, Th-18; bifacial microflake removal on convex edge; cortex backing.

Feature 9—Floor Contact

Scraping

Obsidian— L-49, W-29, Th-12; unifacial microflake removal on concave edge; cortex backing.

Basalt— L-48, W-32, Th-16; unifacial microflake removal on convex edge, polish on [illegible] and high points; cortex backing.

Basalt— L-57, W-56, Th-20; unifacial [illegible] on convex edge; polish on high points; [illegible] backing.

Basalt— L-65, W-52, Th-24; unifacial microflake removal and polish on concave edge; [illegible]

facial polishing on straight edge; stria at diagonal to edge; cortex backing.

Basalt— L-53, W-50, Th-15; unifacial microflake removal on adjoining concave-convex edges. also a straight edge with angle greater than 45° displays polishing on top of edge, stria are parallel to short axis giving beveled effect; cortex backing.

Ground Stone

Sandstone— Weight- 730 grams, diameter-110, Th-48; circular, exhibits grinding, polish, and pecking on flat surface; round surface (presumably hand held) shaped by grinding and pecking, no visible stria.

Axe

Granite— Weight- 681 grams, L-145, W-88, Th-37; notched by percussion on both lateral margins near poll, battering on distal end, pecking on proximal end (poll).

Feature 9—Upper Level

Ground Stone

Basalt — L-25, W-14, Th-10; slab metate exhibiting unifacial pecking and polishing; recovered from surface adjacent to Feature 9.

Rhyolite— L-200, W-95, Th- 25; unifacial ground mano to form a bevel, stria parallel to short axis.

Axe - Hoe

Basalt— L-165, W-120, Th-40; notched on opposing lateral edges by percussion, no wear exhibited.

Battering

Granite — L-20, W-15, Th-6; river cobble exhibiting battering on one end.

Feature 10

Cutting

Rhyolite — L-43, W-32, Th-11; unifacial, bidirectional, microflake removal on one straight edge and one straight-concave edge, polishing on high points; cortex backing.

Chopping

Quartzite— Weight- 222 grams, diameter-86, Th-23; bifacial microflake removal, exhibits battering; cortex backing.

Ground Stone

Vesicular basalt— Adjusted L-45, W-65, Th-22; bifacially ground mano fragment, stria parallel to short axis.

Hammerstone

Basalt— Weight- 302 grams; exhibits battering on all ridges.

Feature 11

Ground Stone

Basalt— L-22, W-18, Th-6; slab metate fragment exhibiting polish and pecking, stria parallels original long axis.

Feature 12

Scraping

Basalt— L-21, W-14, Th-6; unifacial microflake removal on concave edge, no backing (thought to be fragment of larger flake tool).

Feature 13

Hammerstone

Quartzite— Weight- 641 grams, L-105, W-60, Th-50; battering on both proximal and distal ends; cortex present.

Feature 14

Scraping

Basalt— L-59, W-30, Th-13; unifacial microflake removal on convex edge, polish on high points; cortex backing.

Ground Stone

Basalt — L-125, W-105, Th-60; stria and smoothing parallel to long axis forming a concavity in cross-section.

Basalt— L-135, W-84, Th-28; stia on both faces parallel to short axis, polished on one face.

Rhyolite— L-75, W-60, Th-7; ground on one slightly concave surface.

Vesicular basalt — L-245, W-90, Th-32; fragmented mano, rectangularly shaped grinding on both faces, no stria visible.

Discussion

1. Architecture

Linear roomblocks of adobe or stone masonry and associated circular subterranean kivas would seem to be typical of Pueblo II and Pueblo III architecture. The use of vertical slabs as a foundation for coursed adobe walls has been previously documented in the Upper Rio Grande and adjacent districts. Walls constructed in this manner have been reported by Bussey (1968:65), Wendorf and Lehmer (1956:81) and Wendorf, *et al.* (1953:11). A detailed account of the technique is given by Stubbs and Stallings (1953:25-28) in the Pindi report.

Due to the eroded condition of LA 5014 and the resulting absence of adobe walls, it was impossible to gain further information regarding the application of the adobe. However, wall abutments were generally discernable. Although pueblos of this period are often multistoried (Stubbs and Stallings 1953:152), there was no indication of such a situation at LA 5014.

Subterranean Features 6 and 16 fall into the general pre-A.D. 1300 Rio Grande kiva pattern. This group, with few exceptions, lacks the distinctive kiva features of the San Juan area, such as pilasters, benches, and southern recesses. However, the sipapu, loom depressions and subfloor pits, common features of the Rio Grande kivas, are also absent. Whether it is significant or not, the abrupt shift in masonry style from the east to the west wall of Feature 6 was structured enough to deserve mention again here. The composition of the masonry elements in the eastern and western walls was respectively reminiscent of Chacoan and Mesa Verde architecture (see description). The lack of postholes is explained by assuming construction of a flat roof due to the short diameter of the structure.

TABLE 3.3

LITHIC ASSEMBLAGE—LA 5014

	WF with Cortex		WF without Cortex		PF or ND Shatter with Cortex		PF or ND Shatter without Cortex		Cores with Cortex		Cores without Cortex		Material in Total Assemblage	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Obsidian	124	24.1	150	29.2	82	16.0	157	30.5	1	0.2	–	–	514	67.8
Obsidian(green banded)	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Chalcedony	29	39.7	20	27.4	10	13.7	13	17.8	1	1.4	–	–	73	9.6
Chalcedony with milky white & other inclusions	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Basalt	39	40.2	46	47.4	1	1.0	9	9.3	–	–	2	2.1	97	12.8
Chert	24	34.8	12	17.4	8	11.6	14	20.3	9	13.0	2	2.9	69	9.1
Rhyolite	1	25.0	1	25.0	–	–	–	–	2	50.0	–	–	4	0.5
Quartzite	–	–	–	–	–	–	–	–	1	100.0	–	–	1	0.1
Silicified Wood	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0

KEY: WF - whole flake
PF - partial flake
ND - nondiagnostic

The third subterranean structure, Feature 9, has few excavated parallels in the Rio Grande area. Only from Leaf Water Ruin (Wendorf 1953:16-31) have similar structures been reported. Leaf Water Ruin is an enclosed Chama Valley pueblo in which Wiyo Black-on-White is by far the dominant ceramic type. Two subterranean structures from Leaf Water Ruin are similar to Feature 9 in that all three are roughly the same size, lack a deflector, possess wall niches, and have fire-hearths built against one wall. All are extremely near or attached to surface rooms.

However, Feature 9 differs from the Leaf Water structures in at least two potentially significant ways. First, and probably least noteworthy, is that the ventilator opening of Feature 9 was not raised above the floor as were the ventilators at Leaf Water. This may seem a minor point but "supra-floor ventilators" was one of the architectural attributes listed by Luebben (Luebben 1953:20) as a rationale for calling the Leaf Water structures kivas. The second architectural distinction, in the form of a southern recess present in Feature 9, has only one documented parallel in the Upper Rio Grande. At Salt Bush Pueblo (LA 4997), located north of LA 5014 at the Bandelier National Monument headquarters, a southern recess was found to have been added to a formerly circular kiva. The construction of the recess is thought to have coincided with the reorientation of the firepit-ventilator complex from east-west to north-south. In this case, the recess was attached to a roomblock (Snow 1974:24-35). Admittedly, Feature 9 has a small and unimposing recess, but then it was also a small and unimposing kiva. Kivas possessing southern recesses ("Keyhole kivas") are typical of both Mesa Verde and, to a lesser extent Chacoan, pueblos. Whether this unique feature is a result of interaction by means of migration, contact, or simply local functional design is an unanswered question. It is interesting to note, however, that either Feature 9 and/or the two connected surface rooms may have been later additions to the pueblo. First, the associated surface rooms are not a part of the common center wall to which all other rooms in the roomblock abut. Secondly, even if the surface rooms were constructed originally, the circular wall of Feature 9 is imposed into the ordinarily rectangular limits of the surface rooms and therefore, could easily have been added later.

Based on function, modern pueblos distinguished between two different types of kivas, the Little Kiva and the Big Kiva (Ellis 1950:286). The Big Kiva serves as a communal ceremonial room, while the Little Kiva is a meeting place for "medicine societies" (Ellis 1950). When defining prehistoric subterranean structures, one must not only separate Big Kivas from Little Kivas based on relative size but also consider the possibility of their simply being pithouses. It is often difficult to distinguish the two due to the fact that Rio Grande kivas frequently contain floor features and artifacts otherwise associated with pithouses. However, the building plan of this pueblo allows inference as to the function of the subterranean rooms. The diametrical positioning of Features 6, 9, and 16 in relation to the roomblocks, coupled with their masonry construction, allows these features to be termed kivas.

Another possible indication that these structures were indeed kivas is the postulated presence of surface walls. The Santa Fe Component kiva at LA 6462 (Bussey 1968: 56-58) is thought to have possessed a surface wall because

of the numerous cobbles in the upper fill, even though the lower walls were not masonry, but simply plastered. Evidence of a surface wall associated with subterranean structures may be a legitimate factor in distinguishing pithouses from kivas in multicomponent sites or sites where pithouses continue to be utilized as such even after the introduction of surface structures. Future work should be directed at this possibility.

Although Features 6 and 16 are not Big Kivas in the accepted sense, they are bigger than anything else on this site and I would argue that they and Feature 9 may well have served the same functions as were attributed respectively to Big and Little Kivas earlier in this paper. It is interesting to note that Little Kivas are ethnographically thought to be associated with the Tewa, who have been the suspected users of Mesa Verde keyhole kivas (Ellis 1950:296).

2. Suggested Room Function

The determination of room function in puebloan sites is crucial when one considers the fact that the relative size of any given population of sites is often used to infer growth and decline of the actual human population. Traditionally, rooms other than kivas in puebloan sites have been classed in two groups. Those which possessed floor features (hearths in particular) have been considered living quarters while those without floor features are presumed to be storage areas.

When site preservation is good these assumptions may be tested in a variety of ways. Suspected storage rooms may yield relatively higher pollen counts than living areas; the artifacts in floor context may reflect functions logically associated with storage facilities; and the location of the rooms themselves may fit into a logical pattern of association between living rooms and storage rooms. Unfortunately, the site preservation at LA 5014 does not allow sufficient context to validate any conclusions reached here. The eroded condition of the site (floors at 10cm or non-existant) hac eliminated the retrieval of pollen in context and caused artifacts which may have been associated with the roof to be stratigraphically indistinguishable from those which were on the room floor. Furthermore, the erosion may have destroyed some of the adobe floor features although such complete destruction is thought to be unlikely. Thus the room functions as suggested here are not beyond criticism.

Other than hearths, only two types of floor features are present. A trapezoidal slab feature was discovered in Feature 1 (see architectural description). It may have been utilized as a griddle by placement of hot coals underneath the horizontal slabs which capped the vertically set slabs. However, no evidence of ash or firing was present. Thus it remains a mystery. The second type of floor feature, molded adobe basins, was present in three different rooms. Basins similar to these are not unusual in Santa Fe component sites (Peckham 1975 personal communication; Bussey 1968:32; Beal 1975 personal communication). At Arroyo Hondo, three types of adobe basins were found. Of these, one corresponds morphologically to those found at LA 5014. Pollen studies have indicated that these basins probably constituted a facility involved in the processing of vegetal material (Lang 1975: personal communication).

When the room plan of LA 5014 is compared to the four Santa Fe component surface units excavated at LA 6462 (Bussey 1968:13-72), a generalized pattern emerges. With few exceptions, the rooms which contain hearths are adjacent to the kiva or plaza areas, while those without hearths tend to occur in the second and third row of rooms away from the plaza area. Only one possible example of the molded adobe basins was observed at LA 6462 (Unit III, Room 5). It was located in an otherwise featureless room in the second row of the roomblock.

In an attempt to give more credence to a designation of room function, and fully realizing the aforementioned difficulties regarding the condition of the site, the artifact assemblages and floor features of each room were grouped and a listing is included here.

EASTERN ROOMBLOCK

Feature 1

hearth
unidentified slab feature

molded adobe basin
obsidian reduction assemblage
polishing stone

2 projectile points
(one is fragmented)
13 paint decorated sherds
22 utility sherds

Feature 8

hearth
obsidian reduction assemblage
(hammerstone)
2 lithics with scraping wear
1 lithic with sawing wear
1 projectile point
(fragmented)
burned deer femur

25 paint decorated sherds
127 utility sherds

Feature 7

obsidian reduction assemblage
2 projectile points (fragmented)
2 lithics with cutting wear
2 lithics with scraping wear
8 paint decorated sherds
20 utility sherds

WESTERN ROOMBLOCK

Feature 2

obsidian reduction assemblage
1 lithic with scraping wear
15 paint decorated sherds
20 utility sherds

Feature 12 (open sided room)

hearth
1 lithic with scraping wear
24 paint decorated sherds
11 utility sherds

Feature 15 (open sided room)

hearth (questionable)
2 sherds with scraping wear
72 paint decorated sherds
98 utility sherds

Feature 14

hearth
1 lithic with scraping wear
1 slab metate
1 mano
2 grinding tools
14 paint decorated sherds
37 utility sherds

Feature 5

molded adobe basin
2 grinding slabs

1 mended bowl base
7 paint decorated sherds
7 utility sherds

Feature 3

molded adobe basin
1 lithic with scraping-engraving wear
2 lithics with cutting wear
11 paint decorated sherds
37 utility sherds

Feature 10

1 lithic with cutting wear
1 lithic with chopping wear
1 mano fragment
1 basalt cobble with battering
1 tooth (young deer)
27 paint-decorated sherds
49 utility sherds

Feature 11

1 grinding slab
1 tibia (*Canis* spp.)

In addition, during the ceramic analysis the utility ware had been separated into those sherds which exhibited a carbon accumulation due to post-manufacture firing and those which did not. This was based on the assumption that the burned sherds should cluster in hearth areas and that the unburned sherds would cluster in storage areas. Their distribution appeared to be random.

Upon examination of the assemblages associated with the individual rooms, no clear patterns of association were observed. However, the associations noted allow certain inferences to be made regarding room functions. Such inferences are made with full knowledge of the problems of context previously described.

The presence of distinct obsidian reduction assemblages in all three rooms of the eastern roomblock and the absence of such assemblages in the western roomblock may indicate the specialization of an individual or a social group in the manufacture of bifaces. Of the 514 pieces of obsidian debitage, 378 or 73% were recovered from the eastern roomblock and associated kiva. As previously mentioned shaped bifaces from LA 5014 are predominantly obsidian. Since it does not seem logical that such reduction would have taken place indoors, it is assumed that the roofs were utilized as work areas.

Features 12 and 15, which are contiguous with open sides to the north and south respectively, are thought to be work areas. The heavy concentration of ceramics in association with worked sherds in Feature 15 would support this, but the lack of artifacts in Feature 12 gives us far less supporting evidence.

Features 1, 8, and 14 contain hearths and diverse artifact assemblages. These features are considered to be habitation rooms. If the observed patterning of Santa Fe component sites is correct, the unexcavated section in the western roomblock between Features 14 and 10 should contain two habitation rooms, containing both hearths and diverse artifact assemblages.

Features 2, 3, 5, 7, 10, and 11 are thought to be combination work-storage areas. In some cases, particularly where ground stone is present, the work may have been associated with the storage facility. However, in seasons when the storage facility was largely unused, such rooms no doubt were utilized for a variety of functions, particularly if the weather was inclement.

Assuming that the discussed function of the moulded adobe basins is correct, Features 3 and 5 may be specialized storage rooms, the basins constituting a processing facility for a particular food stuff. The presence of a basin in Feature 1, defined here as a habitation room and possessing a hearth, may be explained in terms of convenience. Convenience may also explain the presence of ground stone in Feature 14, which is a defined habitation room.

In general, the analysis revealed that the rooms with hearths consistantly produced diverse artifact assemblages in comparison to those without hearths. Hearths and comparatively diverse artifact assemblages were the criteria employed to designate habitation rooms at Broken K Pueblo in eastern Arizona. Rooms classed as storage facilities at Broken K Pueblo were relatively smaller than the designated habitation rooms (Martin 1967:30-32), in contrast to LA 5014, where all of the rooms maintained a more-or-less standard size.

Further work aimed at these basic functional problems is necessary before adequate conclusions can be reached.

Comment

It is felt that Pueblo Medio supported a perennial occupation for an undetermined length of time. That the length of its occupation was relatively short is suggested by the amount of material culture recovered by its excavation. However, the fact that the site was badly eroded may have allowed much material to be collected by travelers or deposited beneath the alluvium formed by the adobe washed down from the pueblo on the north side of the roomblocks.

Both roomblocks are thought to be contemporary and do not represent two occupations of the site. The construction techniques used in both roomblocks are identical. In fact the standardization of building materials and techniques throughout the site suggest that the entire site was constructed at once. The only possible exception (Feature 9) is discussed in the architectural section. As mentioned before, the site is laid out symmetrically with kivas of similar masonry construction associated with each roomblock.

In a further attempt to support the idea that the roomblocks were contemporary, the ceramic assemblage from each was compared. The percentages for each decorated type in the assemblage were almost equal in each roomblock. Admittedly the sample is small, but the percentages taken do lend credence to the thought that the roomblocks were contemporary.

TABLE 3.4

DECORATED CERAMIC ASSEMBLAGE

Eastern Roomblock	No.	%
Santa Fe B/W		
white slipped	35	70.0
blue-grey slipped/floated	13	26.0
Wiyo B/W	1	2.0
Galisteo B/W	1	2.0
	50	100.0
Western Roomblock		
Santa Fe B/W		
white slipped	128	68.1
blue-grey slipped/floated	46	24.5
Wiyo B/W	8	4.1
Galisteo B/W	6	3.2
	188	99.9

The effort and care with which the site was constructed suggests more than a seasonal occupation. Unfortunately, the flotation samples taken did not yield data pertinent to the inferred perenniality of the site. The architectural features compare favorably with those of other P-III sites on the Pajarito Plateau and the adjoining flood plain which are thought to have been perennial. The lithic material recovered displayed a systematic manufacture of bifaces, a manifestation not observed in the assemblages from other sites thought to be seasonal (LA 5013, LA 12511 and LA 12512). The ratio of storage rooms to living rooms indicates that a

sufficient amount of goods were being stored to maintain a year-round occupation. The ratio of habitation rooms to storage rooms in the four units at LA 6462 which are thought to be perennial varied from 1:1 to 1:2.7. In short, there is no reason to suspect a seasonal occupation and several indications to suspect a perennial one.

The nature of the subsistence base supporting the inhabitants of Pueblo Medio is unknown. Almost certainly they practiced some corn agriculture. The site is located on the Medio Canyon alluvial fan which is the largest open land area in the canyon. There are, however, bits and pieces of data which indicated that their dependence upon domesticated plants was limited.

Although the fan does provide a relatively large land area, the soils present are today considered low in agricultural potential (Agricultural Experiment Station Research Report 1971:8-25) when compared to the floodplain below the mouth of White Rock Canyon. There is no reason to suspect that it was significantly different prehistorically.

No corncobs or kernels were recovered from Pueblo Medio. It was hoped that the seeds recovered from the flotation samples would provide sufficient data to form conclusions regarding subsistence, but the sample of identifiable seeds was too small to provide a basis for inference. It is intersesting to note that only a limited amount of corn was recovered from the Santa Fe component at LA 6462 (tree ring date—A.D. 1280) which is located on the floodplain, while the Kwahe'e component at LA 6462 produced a considerable quantity (Ford 1968:243-244). The absence may be due to the poor preservation of Santa Fe period sites. However, the fact remains that the presence of corn is significant quantities in Santa Fe period sites of the Cochiti area has yet to be demonstrated.

Another factor pointing to a shift in subsistence strategy from the Kwahe'e period is the discarding of trough metates in favor of slab and basin types (Wendorf and Reed 1955:145). Slab and basin metates are usually associated with hunting and gathering groups who used them to process wild seeds and other vegetal material. The trough metate has been considered a specialized tool for the processing of corn. This shift is general throughout the greater Rio Grande district during the P-III period. Slab metates continue to be used in the area through the historic period. However, when found in P-IV sites they are usually associated with a bin which might have served the same purpose as the sides of a trough metate. No mealing bins were found at LA 5014 or LA 6462. It may be inferred that the shift in metate type during this period reflects a shift in subsistence strategy. The continued use of the slab metate with the addition of bins during the P-IV period may be seen as both a holdover from this P-III transition and as an indication of the importance assumed by wild vegetal materials in order to support the accreted population centers of the Classic Period. That the mealing bin was not an instantaneous development correlated with the advent of the slab metate during P-III is emphasized by their absence at Te'ewi, an early 14th century site in the Chama Valley (Wendorf 1953:68).

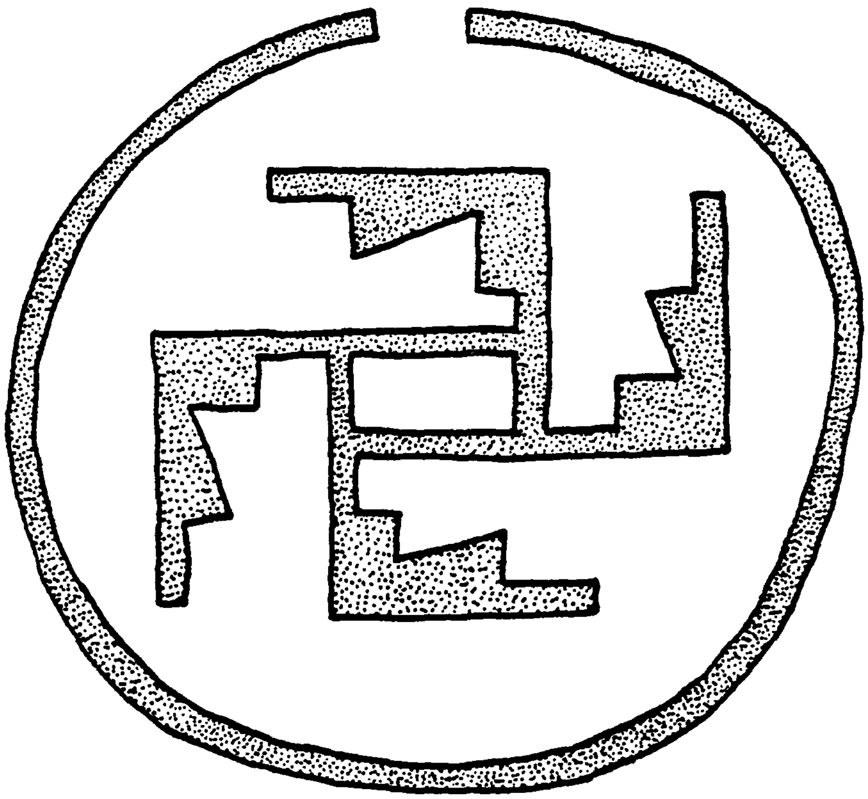
Smiley, Stubbs and Bannister (1953:53) document a long period of curtailed development of tree rings in the area from A.D. 1245 through A.D. 1290. Presumably this reflects drought conditions. If such a drought occurred it would not be unreasonable to assume that the arroyo cutting which accompanied droughts in other areas of the Southwest (Schoenwetter and Dittert 1968) also occurred in the Rio Grande flood plain. Such an occurrence would have made agriculture a marginal proposition in any area and forced the Pueblo III population to adopt a subsistence strategy requiring a greater dependence on hunting and gathering. Survey data acquired during the Cochiti Reservoir Project shows that Pueblo III components are distributed in two major life zones and eight distinct vegetative communities (Biella 1977), a situation suggesting the utilization of a widespread and varied subsistence base. It is interesting to note that Salt Bush Pueblo in Frijoles Canyon is thought to have been abandoned ca. A.D. 1250 of the beginning of the supposed drought. Snow discusses an "upslope movement" presumably occurring after the abandonment of Salt Bush Pueblo (Snow 1974:70). Frijoles Canyon in the area of Salt Bush Pueblo is analagous in terms of agricultural potential to the Rio Grande floodplain below White Rock Canyon, particularly when both are compared to the canyon environment of LA 5014. The "upslope movement" there may parallel the suspected move to the plateau region from the Cochiti area. That such a change in strategy did not change the pueblo system has been documented elsewhere and explained as an effort to maintain an established cultural system in the face of adversity (Schoenwetter and Dittert 1968:53-54). The survey data acquired during the Cochiti project shows little change in the number of sites on the floodplain from Pueblo I and II to Pueblo III. However, the number of sites on the Pajarito Plateau increases dramatically during Pueblo III. This has been interpreted as an increase in population (Dickson 1975: 159-171). However, if times were hard, a permanent settlement could only survive for a short time in any particular location. Thus a number of sites could be created by the same group in a relatively short time period.

Viewing data from LA 6462 and LA 5014, the ratio of "living rooms" to "storage" rooms in Pueblo III sites of the area is almost equal in every case, with the storage rooms more frequently in the majority. When computing population in terms of room counts from survey data, this ratio should be considered.

Another bit of data which can be interpreted as a reflection of economic stress is the almost total absence of decorated jar forms at LA 5014. Only two decorated jar sherds were found. One of these was Tularosa B/W an intrusive; the other was Santa Fe B/W. Both were recovered from the kivas (Features 6 and 16). Paint-decorated jar forms require considerable expertise and time to produce due to the inward curvature of the shoulder and the restriction of the oriface. This difficulty in manufacture, coupled with the finishing process (smoothing, painting, etc.) would involve the expenditure of considerable time. The utility ware at LA 5014 was composed entirely of jar forms with wide oriface, not as difficult to produce. The manufacture of paint-decorated jar forms in quantity would require considerable time and effort and in times of stress would be considered a luxury. Again, the size of our sample limits the validity of this hypothesis but the fact that both were recovered from kivas and that one of the sherds was an intrusive and thus probably a luxury item lends credence to the idea. Such a relationship should be tested further in sites where a stress situation is certain.

Whether or not the occupation of Pueblo Medio was

subjected to this type of stress situation is uncertain. The factors discussed here tend to support the hypothesis. Future work in the area should include further studies of climatic change through tree rings, arroyo cutting, extensive pollen studies and more absolute dates before conclusions can begin to be reached.



LA 12511

Introduction

LA 12511 lies approximately 1.5 kilometers upstream from the mouth of White Rock Canyon on the west bank of the Rio Grande; the site overlooks the old Cochiti–Frijoles trail. It is situated on a small knoll overlooking the Rio Grande, which is about 40 meters distant. Possessing approximately 50 square meters of horizontal surface, this knoll is overshadowed by a larger knoll which marks the beginning of a steep talus slope of basalt boulders.

This site contains two small contiguous surface rooms. A possible third structure was present, but it was badly eroded and jumbled by root action. However, only four walls were clearly defined in the site.

The ceramic evidence indicates that LA 12511 was occupied in the early part of the Coalition Period (ca. A.D. 1200-1325). The size of the site and the quantity of artifacts, indicate that its occupation was small and short lived and perhaps only seasonal.

Method of Excavation

The initial survey of the site indicated only a single structure, a semi-circular wall of basalt rubble on the extreme northeastern point of the knoll which was partially obscured by five juniper trees.

As the rest of the knoll and particularly the slope towards the river contained a relatively high density of surface artifacts, a system of one meter grids was established. This was intended to aid in surface collections and to structure testing in the supposed plaza area on the top of the knoll.

A large number of basalt slabs were scattered about the site. These were collected and stacked according to the section of the site from which they were collected. This was done in an effort to determine the original wall height.

A test pit, Feature 1, was begun inside the semicircle of rubble with the intention of locating the floor. The slope towards the river was surface collected and testing was begun in the grids adjacent to the probable room.

As excavation progressed, it became apparent that we were dealing with two surface rooms in the grid area. A north-south wall of mortared basalt slabs 3.1m long and oriented 15 degrees east of true north was exposed. This first wall was perpendicular to the rubble semi-circle and in fact incorporated a portion of it with a slight eastern curve. To the east of this wall, an ash lens varying

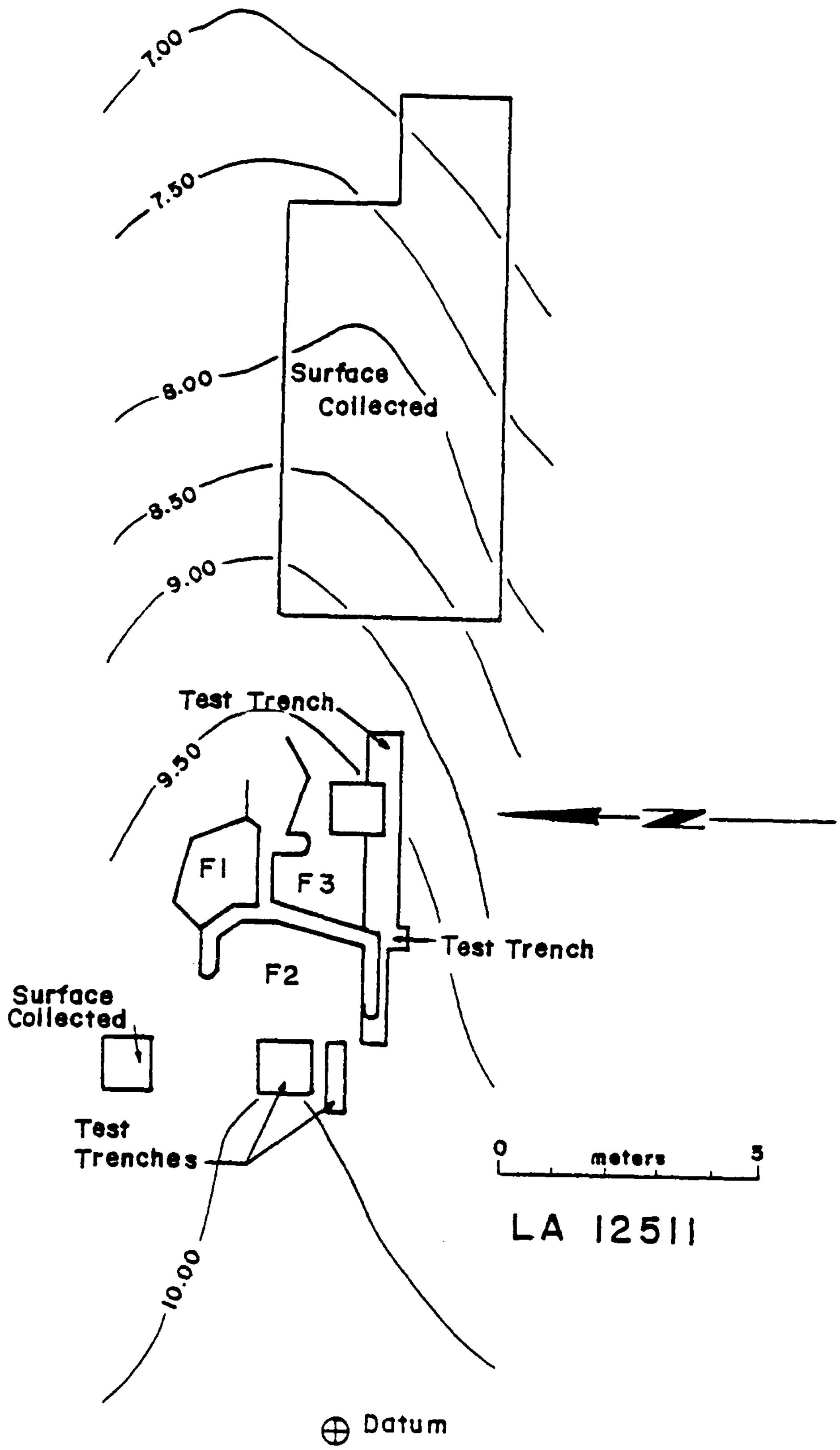


FIG. 3.21 LA 12511 Site Map

from 1.0 to 2.0cm in thickness was found at a depth of 5cm. Two slab features were also exposed in this area and were found to be set in the surface directly below the ash lens.

The area covered by the ash lens was approximately 2.5 square meters. It terminated to the south with the end of the north-south wall and to the north with the east-west rubble wall. The slope of the knoll began 1.6m east of the north-south wall. As a consequence, the ash lens became spotty in that area. A one meter grid was excavated to a depth of 1.5m at the beginning of the slope. However, no cultural material was recovered below the 20cm level. Test trenches to the east and south failed to reveal additional walls, although a layer of washed adobe 4cm thick at the 5cm level may have been a remnant of a southern wall. Scattered basalt slabs just to the south of this adobe layer may have constituted the masonry elements of the wall. This area was designated Feature 3.

To the west of the north-south wall an ashy clay level was exposed at the 10cm level. This layer was followed to the south and a southern wall constructed of both vertical and horizontal basalt slabs was defined. This wall joined the southern end of the north-south wall and extended west for a distance of 1.4m. The wall is oriented 103 degrees east of true north.

As the ashy clay layer was followed to the north, it became apparent that it was actually an eroded floor. In the portions of the room where the wall fall was heaviest, the floor had been well preserved. Further excavations revealed a north wall of single horizontally laid slabs attached to the northern end of the north-south wall. This wall was oriented 104 degrees east of true north and was 1m long. Testing did not locate a western wall and the floor ended on a line with the western end of the north and south walls. The only floor feature was a circular hearth. This room was designated Feature 2.

Meanwhile, the test pit in Feature 1 had reached a depth of 1.42m without finding a floor. The last cultural material had been recovered from the 40-50cm level. Clearing off the remaining surface in Feature 1 revealed that the rubble wall had been at least partially created by wall fall from Feature 2 and 3. Feature 1 was therefore abandoned.

Architecture

Feature 1

Feature 1, originally believed to be a room, is now considered wall fall from Feature 2 and 3. This wall fall had initially appeared to be a room built on the edge of the slope. A 2m x 2m test pit was excavated to a depth of 1.42m. Structural debris was not found below the surface rubble. The cultural material found at the 40-50cm level was no doubt deposited by a combination of root action and alluvial movements on the slope formed by the knoll. The juniper trees surrounding the north side of this feature were a further hindrance to the excavation.

Feature 2

Feature 2 was a three-walled structure constructed of basalt slabs. The north wall was 1m long and oriented 104 degrees east of north. It consisted of single horizontally laid basalt slabs, varying from 20 to 24cm in width, which had been the foundation for additional slabs. Fall from this wall was evident in the fill of Feature 1.

The eastern wall was constructed of horizontally laid basalt slabs with adobe mortar. It was 3.1m long and averaged 22cm in width and 15cm in height. Oriented 15 degrees east of true north, the wall curved slightly to the east and back again until it joined the north wall.

The south wall was constructed of both horizontally stacked and vertical basalt slabs. It is possible that the vertical slabs were foundations for an adobe wall. In any case, the wall was 1.4m long and averaged 20cm in width. Height varied from 11 to 15cm.

The floor was badly eroded and was best preserved near the center of the feature, where rubble from the wall fall had protected it. It was from 4 to 5cm thick and was constructed of adobe mixed with coarse river gravel. A circular hearth was exposed midway between the north and south walls and 25cm west of the east wall. It was 42cm in diameter and 12cm in depth. A flat slab lined the bottom. The remainder of the hearth was constructed of adobe which had a bright red hue due to firing. The rim had eroded away but three supports made of river cobbles remained imbedded in the sides. No additional floor features were found. There was no evidence of roof construction.

Feature 3

Feature 3 consisted of two walls and a living surface that cannot really be defined as a floor.

The north wall had slumped badly. Part of the rubble wall of Feature 1, it was 3.5m long, averaged 30cm in width and was 25cm in height. It was oriented 106 degrees east of true north and curved slightly to the north at its eastern extremity. Midway along this wall, at a point 1.2m from the western wall, the lack of basalt rubble in the immediate area gave equal credence to the idea that it may have been a buttress.

The western wall of Feature 3 (referred to elsewhere as the north-south wall) is a common wall with Feature 2. The only discrepancy is that the wall only projected 7 to 8cm above the living surface of Feature 3 as compared to 15cm above the floor of Feature 2.

The eastern and southern walls were absent, although a patch of washed adobe may have been an indicator of a southern wall. The alignment of the adobe was correct in that the linear patch was perpendicular to the southern end of the north-south wall.

No prepared floor was found. Because of this fact, it is possible that Feature 3 was an outdoor work area. Two slab features were exposed in this area. The first consisted of three vertical slabs set into the living surface against the western (north-south) wall. Two of these slabs were set 4cm apart and parallel to the wall. The third was set perpendicularly to the first two, forming a southwest corner.

The second slab feature was 50cm east of the north-south wall on a line with the first slab feature. This feature consisted of one horizontal slab surrounded by three vertical slabs on the western, northern, and eastern

sides. A single small vertical slab was set on the southern perimeter of the feature.

No additional features were defined. There was no evidence of roof construction.

Discussion

The architectural style present in LA 12511 blends two common building techniques of the Rio Grande area. Utilization of vertical slabs as a foundation for coursed adobe walls is well documented in the Rio Grande and elsewhere (Hayes 1964:94: Wendorf and Lehmer 1956: 181; Lange 1968:65; Wendorf *et al.* 1953:11). The use of mortared, horizontally stacked slabs is common throughout the Anasazi area. Unfortunately both techniques are too long-lived to act as temporal indicators.

The south wall of Feature 2 was the only section of the complex constructed with vertical clasts, the remainder consisting of stacked and mortared slabs. This would seem to indicate that the southern wall was of adobe while the remainder was of stone masonry. However, it is possible that vertical slabs coupled with adobe were simply used as a base for stone masonry. Volumetric measurements of recovered building materials show that there was enough material to build up the existing foundation to over a meter in height. Perhaps a combination of adobe and masonry was used throughout, as had been reported elsewhere (Ellis 1975:35).

The open west side of Feature 2 is thought to be intentional because of the manner in which the floor ended in line with the western ends of the northern and southern walls. It is possible that a wall of perishable material was erected there, although no indication of such was found. Similar open sided rooms were found at LA 5014 (this publication).

A similar situation exists on the southern and eastern sides. It is possible that the existing northern wall of Feature 3 merely provided a windbreak for a work area. The function of both slab features in this area is unknown.

Ceramics

Ceramics excavated from LA 12511 are indicative of two periods of the upper Rio Grande sequence, the Coalition Period and Classic Period (Wendorf and Reed 1955:143-154). It is postulated that the presence of glaze-decorated ceramics (Classic Period) do not represent a distinct cultural component at LA 12511. Glaze painted sherds were not recovered from floor contact. It is probable that all five glaze sherds were deposited at LA 12511 by later travellers within the canyon.

The decorated ceramic type associated directly with the structures (floor fill and floor contact) is Santa Fe Black-on-White (white slipped variety). No sherds of the blue-grey slipped/floated variety of Santa Fe Black-on-White were recovered. If the stratigraphic isolation which indicated that slipped variety was the earliest of the two varieties (reported by Honea 1958:5) is valid, then the sherds present at LA 12511 indicate that it was occupied during the early part of the 13th Century. However, the two varieties do occur intermixed at larger, more complex Santa Fe component sites, thus the size of the sample from LA 12511 does not preclude the possibility of a late 13th Century occupation.

TABLE 3.5

CERAMIC ASSEMBLAGE–LA 12511

Total Sherds	No.	%
Santa Fe B/W (white slipped)	18	47.4
Agua Fria G/R	3	7.9
San Clemente G/Poly	2	5.3
Corr./Oblique Indented	8	21.0
Plain/Body	7	18.5
	38	100.1
Feature 2		
Santa Fe B/W (white slipped)	2	100
Feature 3		
Santa Fe B/W (white slipped)	8	88.8
Plain/Body	1	11.1
	9	99.9

Lithics

The lithic material from LA 12511 was sparse (78 flakes), and the majority was recovered from the surface.

The cortex observed was predominantly waterworn, an indication that material was collected in the riverbed and from nearby alluvial deposits. Reduction of cores was accomplished on the site, the production of simple flake tools being the main intent.

Chalcedony (24.4%), basalt (29.3%), and chert (40.2%) were the dominant materials used. The recovery of basalt and chert cores indicate those materials were most easily available. Obsidian is represented by one flake and one projectile point. The possibility that the flake and projectile point were imported to the site is indicated by the absence of an obsidian reduction assemblage. Two flakes of chalcedony with milky-white inclusions and one flake of quartzite might also be considered intrusive.

One flake of chalcedony showed wear patterns fomed by a sawing motion. Wear formed by scraping was observed on four basalt and two chalcedony flakes. Drilling or incising attributes were limited to two flakes of chert recovered from the northern section of Feature 3. Cortex backing was present on eight of the eleven lithics exhibiting wear. Backing was present regardless of type of wear.

It is interesting to note here that of the three basalt artifacts found which would be typologically referred to as "choppers," all exhibit scraping wear in the form of rounding and polishing rather than battering as the typology would suggest. A single granite river cobble did exhibit battering on one end.

The ground stone assemblage consists of one complete and one fragmentary shaped rectangular mano of vesicular basalt. This type is generally associated with trough metates, but no metates were recovered.

Utilized Lithic Material

All measurements are in millimeters unless otherwise designated. L, W, and Th mean Length, Width, and Thickness.)

Sawing

Chalcedony— L-35, W-66, Th-10; microflake removal, concave edge; cortex backing.

Scraping

Chalcedony— L-32, W-34, Th-9; microflake removal, polish on one convex edge; no backing.

Chalcedony— L-26, W-20, Th-10; microflake removal, polish on two distinct convex edges; cortex backing.

Basalt— L-23, W-55, Th-15; polish and microflake removal, concave-convex edge; cortex backing.

Basalt— L-24, W-37, Th-11; microflake removal, wear on convex edge of hinge fracture; cortex backing.

Basalt— L-100, W-61, Th-33; "chopper" with polish, rounding on convex edges; cortex backing.

Basalt— L-35, W-40, Th-9; polish and rounding; microflake removal on concave edge; no backing.

Basalt— L-110, W-105, Th-23; "chopper" with polish and rounding on convex edges.

Basalt— L-88, W-85, Th-22; "chopper" with polish and rounding on convex edges.

Drilling or Incising

Chert—L-40, W-28, Th-16; acuminate with rounding; cortex backing.

Chert—L-45, W-38, Th-14; acuminate with rounding; no backing.

Projectile Point

Obsidian— L-45, W-27, Th-5; corner notched; edges are rounded.

Other

Granite river cobbles exhibiting battering on one end; weight- 1923 grams.

Ground Stone

Mano fragment—vesicular basalt; adjusted L-10cm, W-13cm, Th-4.5cm, intentionally rectangular, exhibits grinding on two faces; no discernible striae.

Mano— vesicular basalt; L-21.5cm, W-12.5cm, Th-4.5cm; rectangular shape, grinding on both faces; no discernible striae.

TABLE 3.6

LITHIC ASSEMBLAGE—LA 12511

	WF with Cortex		WF without Cortex		PF or ND Shatter with Cortex		PF or ND Shatter without Cortex		Cores with Cortex		Cores without Cortex		Material in Total Assemblage	
MATERIAL	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Obsidian	–	–	1	50.0	–	–	1	50.0	–	–	–	–	2	2.4
Obsidian (green banded)	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Chalcedony	9	45.0	3	15.0	2	10.0	6	30.0	–	–	–	–	20	24.4
Chalcedony with milky white & other inclusions	1	50.0	1	50.0	–	–	–	–	–	–	–	–	2	2.4
Glassy basalt	10	41.7	1	4.2	3	12.5	7	29.2	3	12.5	–	–	24	29.3
Chert	14	42.4	6	18.2	8	24.2	3	9.1	2	6.1	–	–	33	40.2
Rhyolite	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Quartzite	–	–	–	–	–	–	–	–	1	100.0	–	–	1	1.2
Silicified Wood	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0

KEY: WF - whole flake
PF - parial flake
ND - nondiagnostic

Comment

Whether or not the Pueblo III occupation of LA 12511 was seasonal is uncertain. The sparse artifact assemblage suggests that the occupation was brief in any case. LA 12511 is one of many Pueblo III sites in the project area. Most of the previous work has concentrated on the larger sites so that the relationship between the small sites and the larger ones has never been worked out. It is possible that LA 12511 was a seasonal field house for inhabitants of the larger Pueblo III sites in the area. However, it is equally possible that it represents a short-term occupation by elements of a population subjected to considerable environmental stress (see LA 5014, this report).

LA 12512

Introduction

LA 12512 was a small two room structure. The site was on the south-western exposure of the talus slope overlooking, and 30 meters above, the west bank of the Rio Grande about one mile above the mouth of White Rock Canyon.

The rooms are semi-subterranean with the west walls dug into the hillslope. They lie on a flat portion of a small bench that has a rather steep slope from the rooms to the river bed.

The structure is constructed of unmodified basalt blocks from the talus with adobe mortar. A number of boulders protruded from the soil on the hill. The predominant vegetation was juniper. Neither the boulders or the trees interfered with excavation.

Method of Excavation

Excavation of the site was begun on March 19 and ended on March 25, 1975, using a crew of six from New Mexico State University.

A one meter grid system was established on the slope surrounding the structure. Rows (east-west) were lettered A through P beginning at the southwest corner. Columns (north-south) were numbered 1 through 13.

A surface collection was taken and recorded from each grid separately. Test pits were sunk into the centers of the rooms until floor level was reached. The test pits were then extended into trenches until the walls were defined, after which the remaining fill was removed.

A test pit was dug in grid G-2 when a soil discoloration was observed during surface collection. This discoloration, an ash lens, turned out to be a burned bush and the test pit was abandoned.

A test trench was also begun in the slope north of Feature 2 in search of the north wall of the house. No remains of the wall were uncovered and the trenching was discontinued.

Architecture

Feature 1

Feature 1 was a small semi-subterranean room with no floor features. It was roughly rec[illegible]gular with the long axis oriented east-west. The w[illegible] wall was 94cm long and 20cm wide. The north wall was 62cm long with an average width of 30cm. The east wall was 89cm long and 28cm wide and the south wall was 60cm long and 30cm wide. The walls were vertical with the west wall being dug into the hill slope to provide a level floor surface. The bases of walls were constructed of vertical slabs of basalt about 30cm in height with horizontally laid basalt blocks above the vertical slabs. All of the wall stones were mortared with adobe. There was no evidence of plaster or remodeling. The wall separating Features 1 and 2 abutted the main house walls.

Floor depth was 128cm below present ground surface and about 113cm below ground surface at the time of occupation. The floor was hard packed adobe with no floor features. No artifacts were found in floor contact.

Entrance into the room was a doorway 45cm wide in the north wall leading into Feature 2. The base of the doorway was 35cm above floor level.

Feature 2

Most of Feature 2 had been eroded away. Sterile soil was reached almost immediately and the floor appears to have been above present ground level. The room was roughly rectangular with the long axis running north-south. The west wall had been dug into the hill to provide level flooring. The south wall was 62cm long, with an average width of 30cm. The west wall was 80cm long by 18cm wide. The east wall was 100cm long and 30cm wide. The north wall was completely gone.

The walls were made of unmodified basalt rocks set vertically into the soil below floor level and these extend approximately 30cm above the floor. Basalt blocks were then laid horizontally above the vertical stones and secured with adobe mortar to make the upper part of the walls. No plaster was found on any of the walls.

The single floor feature was a slab-lined bin placed with the tops of the slabs flush with the floor. The bin measured 69cm long, 48cm wide and 26cm deep. It had originally been lined on the bottom with flagstones but these were missing except along the walls of the bin.

Ceramics

The ceramics excavated from LA 12512 are representative of early Classic Period in the Upper Rio Grande Valley. The one sherd of Santa Fe Black-on-White (white slipped) is believed to date from the early part of the Coalition Period and is out of context when compared to the bulk of the ceramic assemblage.

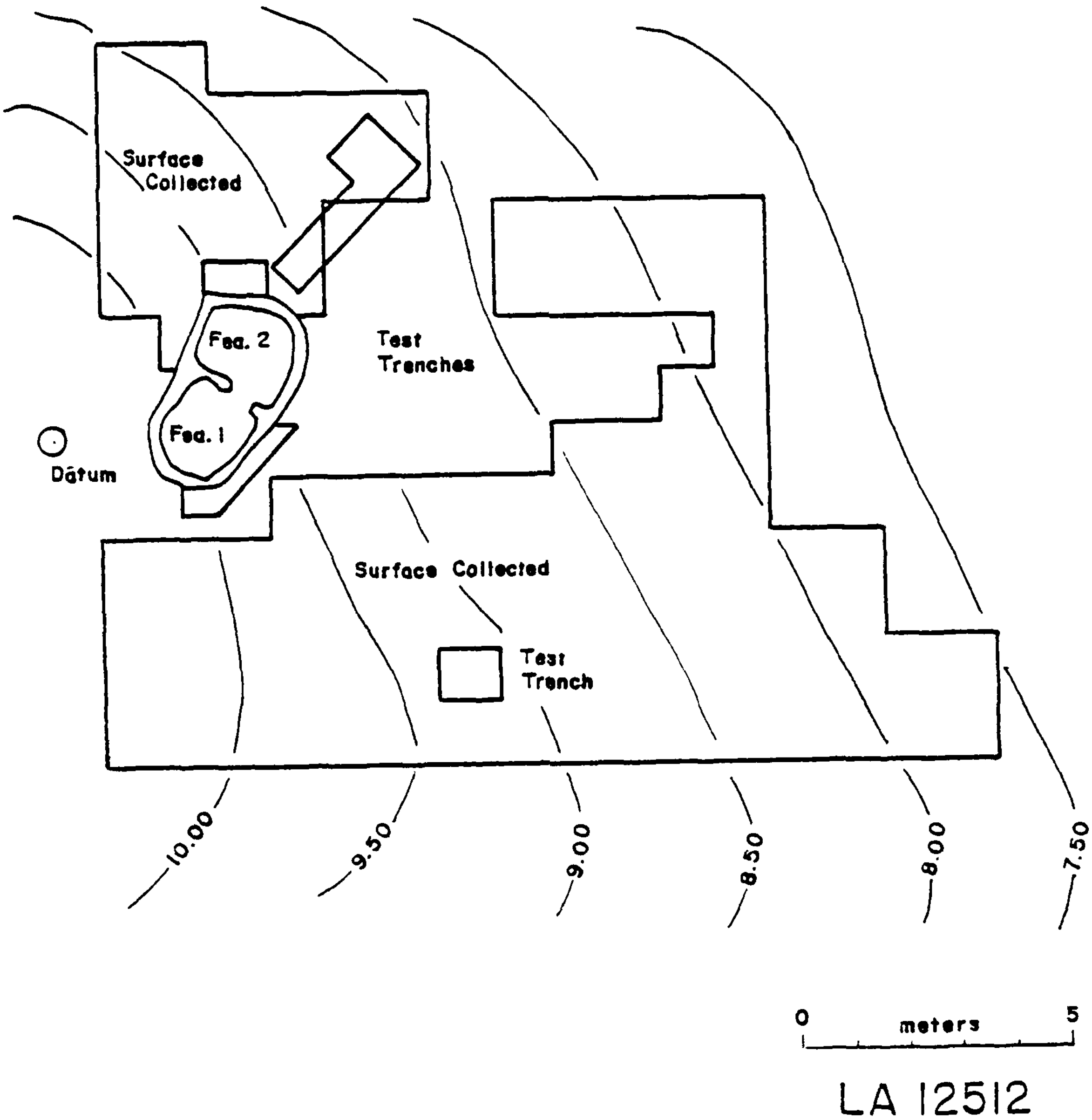


FIG. 3.22 LA 12512 Site Map

San Clemente Glaze Polychrome, Cieneguilla Glaze-on-Yellow, and Socorro Black-on-White show a relative contemporaneity, dating from the latter half of the fourteenth century (Breternitz 1966:96; Eighth Southwestern Ceramic Seminar 1966; I-3, I-8).

The earliest variety of Agua Fria in the Rio Grande Valley has sherd temper (Shepard 1942:148). The tempering materials in the Agua Fria Glaze-on-Red recovered from LA 12512 are igneous rock. The sherds are probably of local manufacture and would, therefore, date somewhat later than the initial introduction of *Glaze I-Red into the Rio Grande Valley for which* a beginning date of A.D. 1300 has been suggested (Breternitz 1966:91). The glaze I-Red present at LA 12512 probably dates from the mid-14th century.

Largo Glaze-on-Yellow, a Glaze II type, is not common until after the beginning of the 15th century (Schwartz and Lang 1972:25; Eighth Southwestern Ceramic Seminar 1966:P. II-1; Breternitz 1966:91).

The high percentage of painted sherds compared to the utility sherds would suggest that LA 12512 was probably occupied on a seasonal basis. The lack of utility pottery would also suggest that these people were not storing or cooking food products on a long term basis, but were using the paint-decorated jars for temporary storage. In turn, the vessels utilized for temporary storage *would also have facilitated transport of food stuffs to* and from a permanent settlement. Of the glaze decorated sherds, 79 were bowl forms while 57 were jar forms. The utility pottery was composed entirely of jar forms.

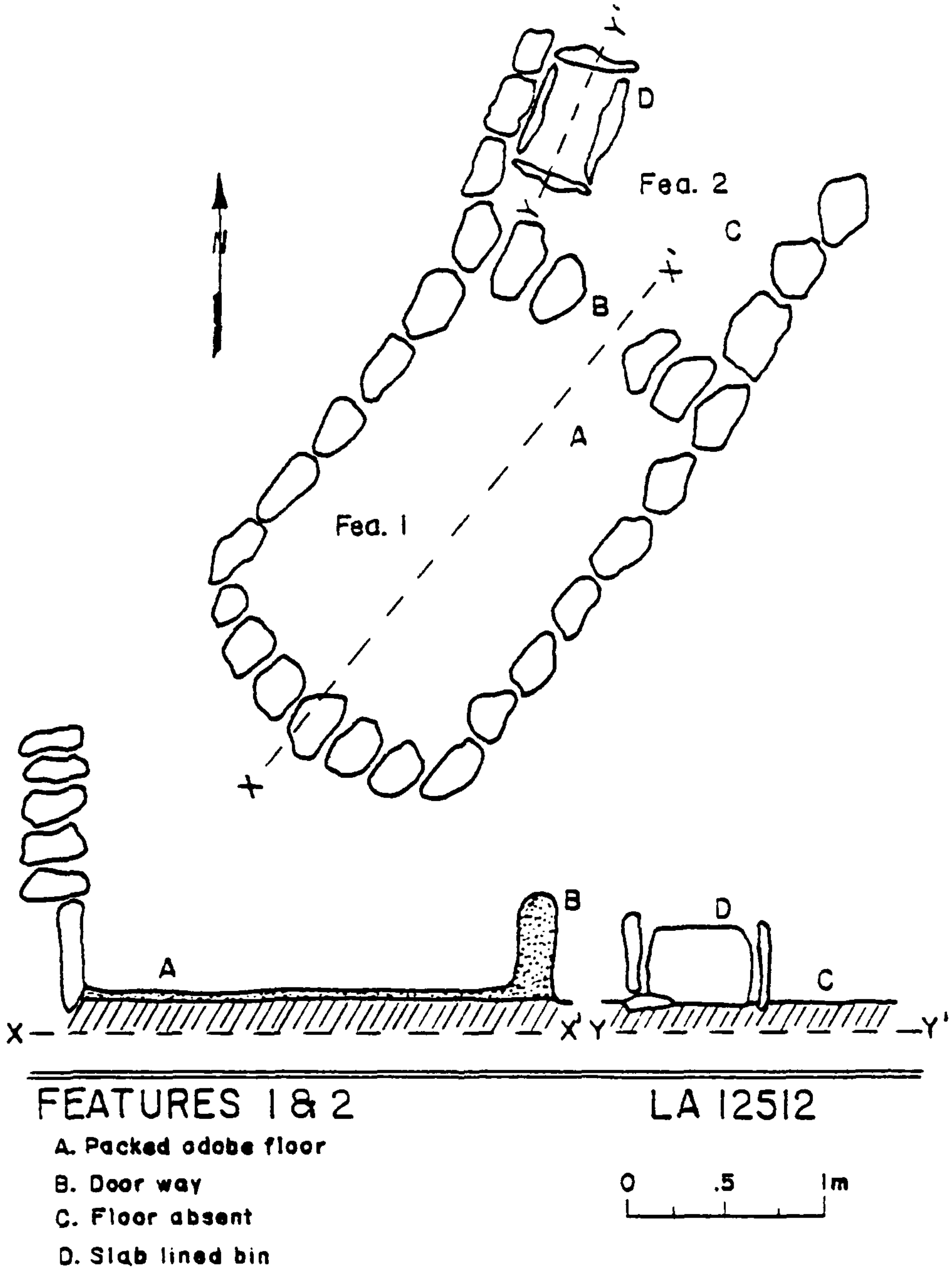


FIG. 3.23 LA 12512 Features 1 and 2, plan view and cross section

TABLE 3.7

CERAMIC ASSEMBLAGE – LA 12512

Total Sherds	No.	%
Santa Fe B/W (white slipped)	1	0.5
Agua Fria G/R	44	24.5
San Clemente G/Poly	4	2.2
Cieneguilla G/Y	18	10.0
Largo G/Y	6	3.3
Unidentified glaze body sherds	38	21.2
Socorro B/W	22	12.3
Corr./Oblique Indented	4	2.2
Plain/Body	42	23.4
	179	99.6
Feature 1		
Agua Fria G/R	8	33.3
San Clemente G/Poly	1	4.1
Cieneguilla G/Y	1	4.1
Largo G/Y	1	4.1
Unidentified glaze body sherds	11	45.8
Plain/Body	2	8.2
	24	99.6
Feature 2		
Cieneguilla G/Y	1	25.0
Largo G/Y	1	25.0
Unidentified glaze body sherds	2	50.0
	4	100.0
Other		

Feature 1: quadrangular shaped sherd (Agua Fria Glaze I-red) with one worked edge, striae visible within the transverse section and lying perpendicular to the lateral edges.

Lithics

The inhabitants of LA 12512 were reducing considerable amounts of raw core material on the site to produce simple flake tools which they used *in situ*. Only one piece of debitage indicated production of bifaces on the site. This was a fragment of obsidian which was bifacially flaked but had been broken by end shock.

Basalt (35.6%), chalcedony (37.3%) and chert (21.8%) made up the majority of the assemblage while obsidian (1.7%), rhyolite (1.2%) and quartzite (2.1%) occurred less frequently. Although chalcedony was the most common material present, the high frequency of basalt cores indicates that basalt was considered an adequate material. As the cortex present in the assemblage was consistently waterworn, it is thought that the majority of the lithic material was gathered from the riverbed and nearby alluvial deposits.

Flake tools exhibiting wear patterns [illegible] scraping action made up the majority [illegible] flakes which exhibited wear. Basalt was the [illegible] material for this function. Two intentionally [illegible] basalt blades are included in this assemblage. Wear formed by cutting action was limited [illegible] three flakes [illegible] chert, one basalt, and one chalcedony. [illegible] scraping and cutting wear was found on [illegible] one basalt flake. Of those flakes on which wear was observed, 60% utilized cortex as backing while the remainder did not have backing.

The ground stone recovered from LA 12512 was not heavily used. Only one small metate [illegible] displayed intentional shaping or prolonged use. The other three artifacts of ground stone showed only light grinding and were unshaped.

It should be noted here that with the exception of two obsidian flakes the lithic material was recovered from the surface. The steep angle of the [illegible] not only destroyed the context for reduction areas [illegible] doubt contributed heavily to the formation of wear patterns.

Wear

(All measurements are in millimeters unless otherwise designated. L, W and Th mean Length, Width and Thickness).

Scraping

Basalt – L-62, W-49, Th-1[illegible], unifacial microflake removal on concave edge; no backing.

Basalt – L-74, W-29, Th-15, unifacial microflake removal and polish on convex edge [illegible] cortex backing.

Basalt – L-74, W-30, Th-15, unifacial microflake removal and polish on concave edge [illegible] cortex backing.

Basalt – L-48, W-47, Th-1[illegible], unifacial microflake removal on convex edge; cortex backing.

Basalt – L-74, W-50, Th-1[illegible], unifacial microflake removal and polish on convex edge; cortex backing.

Basalt – Not measured, whole flake [illegible] cortex; unifacial microflake removal [illegible] edge; no backing.

Basalt – Not measured, whole flake with [illegible] unifacial microflake removal on convex edge; no backing.

Basalt – Not measured, whole flake [illegible] cortex, unifacial microflake removal [illegible] edge; no backing.

Basalt – Not measured, whole flake without cortex, unifacial microflake removal [illegible] edge; no backing.

Basalt – L-40, W-29, Th-7, unifacial microflake removal and polishing on concave edge; cortex backing.

Basalt – L-45, W-30, Th-13, unifacial microflake

removal on convex edge; cortex backing.

Chert— L-40, W-36, Th-13; unifacial microflake removal on convex edge; cortex backing.

Chert— L-74, W-35, Th-15; unifacial microflake removal on both straight and concave edges; no backing.

Obsidian— Not measured; whole flake without cortex, unifacial microflake removal on concave edge; no backing.

Chalcedony— Not measured; whole flake with cortex, unifacial microflake removal on convex edge; cortex backing.

Scraping - Cutting

Chert— Not measured; whole flake with cortex, unifacial microflake removal on concave edge; cortex backing.

Basalt— L-85, W-44, Th-16; polishing on high points; cortex backing.

Cutting

Chert— Not measured; whole flake with cortex, bifacial microflake removal on straight edge; no backing.

Chalcedony— Not measured; whole flake with cortex, primarily unifacial microflake removal on straight edge; cortex backing.

Basalt— Not measured; whole flake without cortex, bifacial microflake removal on cortex edge; cortex backing.

Other

Obsidian— L-55, W-30, Th-10; section of reduced core without cortex, possible beginning of biface which succumbed to end shock.

Chalcedony— unmodified nodule with water-worn cortex; weight- 163 grams.

Ground Stone

Granitic cobble— light grinding unifacially, battering on edges; weight- 175 grams.

Basalt porphyry— unifacially ground; weight- 625 grams.

Metate fragment— vesicular basalt: adjusted L-138, W-155, Th-68; concave slab with no visible straie.

Vesicular basalt— Adjusted L- 145, W- 103, Th-25; bifacially ground on slightly concave surface, edges smoothed (shaped) by grinding.

TABLE 3.8

LITHIC ASSEMBLAGE—LA 12512

	WF with Cortex		WF without Cortex		PF or ND Shatter with Cortex		PF or ND Shatter without Cortex		Cores with Cortex		Cores without Cortex		Material in Total Assemblage	
MATERIAL	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Obsidian	2	50.0	1	25.0	–	–	1	25.0	–	–	–	–	4	1.7
Obsidian (green banded)	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Chalcedony	61	70.1	10	11.4	3	3.4	9	10.3	4	4.5	3	3.4	87	37.3
Chalcedony with milky white & other inclusions	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Basalt	48	57.8	19	22.8	3	3.6	10	12.0	–	–	–	–	83	35.6
Rhyolite	1	33.3	2	66.7	–	–	–	–	–	–	–	–	3	1.2
Chert	28	54.9	14	27.4	6	11.7	1	1.9	2	3.9	–	–	51	21.8
Quartzite	–	–	1	20.0	–	–	2	40.0	–	–	2	40.0	5	2.1
Silicified Wood	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0

KEY: WF - whole flake
PF - partial flake
ND - non diagnostic

Comment

Small (one or two room) structures built of mortared, unmodified basalt clasts are common in White Rock Canyon (personal observation, Cochiti Lake Project Minimum Pool Survey, 1975). Such structures often utilize existing boulders as a wall or are partially dug into a slope. Usually associated with ceramics of either the Glaze or Historic periods, they are generally thought to be seasonal field houses utilized by the inhabitants of one of the several large Glaze or Historic pueblos located nearby. Apparently, inhabitants of the nearby Glaze pueblos were exploiting both agricultural and non-agricultural food sources there during the warmer months. The lack of a hearth inside the structure attests to the fact that it was not inhabited during the bitterly cold winter months common to the Upper Rio Grande. Exactly what they were procuring or processing at the site is unknown.

LA 12522

LA 12522 was a multicomponent site containing a small roomblock, one subterranean room and a pithouse. It was located on a point on the west bank of the Rio Grande, to the northeast and just below the Cochiti overlook.

The surface rooms were built along the westernmost edge of the hill on a north-south axis. The subterranean room lay beneath the southern surface room. The pithouse was approximately two meters east of and downslope from the surface structure. The point of the hill was created by a junction of two arroyos that cut the land on the southwest and northeast sides of the site. A few boulders protruded from the soil and the primary vegetation was juniper. Neither the boulders nor the trees interfered with excavation.

Method of Excavation

A one meter grid system was established on the upper portion of the slope surrounding the structure with rows A through M oriented east-west and columns 1 through 19 oriented north-south. Grid A1 was in the southwest corner. A surface collection was taken and recorded from each grid. Many artifacts had been washed out of context and lay at the bottom of the slope. It was felt that even without good context these artifacts would provide information about the occupants of the site. They were collected, but without recording their location except to note that they came from the slope.

A test pit was put into Feature 1 down to the first suspected occupational level, expanded to the walls, and fill was removed. Another pit was sunk through the first level down to the original floor of the pithouse and the same procedure was followed. A trench was run along the eastern side of the surface building from south to north, each room being cleared of fill as it was encountered.

Architecture

Feature 1

Feature 1 was a pithouse about 2 meters east of and downslope from the surface structures. It had a diameter of about 3.85m and an average depth from present ground surface of 1.93m. The floor plan was roughly circular with the east-west axis somewhat longer than the north-south axis.

The walls were vertical and covered with adobe plaster which had been blackened with smoke. Sticks 3cm to 4cm in diameter were placed vertically about 1 meter apart behind the plaster for reinforcement. The plaster had deteriorated beyond recognition over nearly half of the walls but reached almost to the present ground surface in some places.

There was an indication of two levels of occupation in the pithouse. The level of the suspected first occupation was a layer of uneven puddled adobe 57cm below present ground level. The puddled adobe overlay a 10cm layer of charcoal which in turn covered a 4cm stratum of white sterile sand. There were no features in or on this level, but three manos, one trough metate, one slab metate and numerous sherds were found in context with this level.

The original pithouse floor was plastered, hard packed adobe: It was even and level except for a slight rise up to the hearth. The ventilator was to the east of the house. Time did not permit complete excavation of the ventilator shaft. The base of the tunnel entered the wall of the house at floor level. The opening, measuring 40cm by 50cm, was roughly square. The adobe wall plaster extended 10cm into the tunnel. The deflector was made entirely of adobe, finely formed and shaped. It was 104cm long, 47cm high and 23cm wide. The ash pit was 70cm long, 20cm wide and 15cm deep. It was adobe lined and placed between the deflector and the hearth. The hearth was fire-hardened adobe measuring 83cm outside diameter, 60cm inside diameter and was 30cm in depth. There were five unevenly placed postholes, two of which were thought to be ladder holes. These ladder holes were 70cm west of the hearth and 75cm apart. All five holes were 9cm in diameter and were about 15cm deep. The sipapu was directly in line with the ventilator, deflector and hearth. It was 15cm in diameter, about 15cm deep and was filled with fine sand.

One broken jar of corrugated utility pottery was found on the floor was were two flat stones placed at right angles to each other on the south side of the hearth. Another flat stone lay on the floor on the west side of the pithouse and a very flat square stone was uncovered leaning against the back of the deflector. This stone was thought to have been used to block the draft from the ventilator opening.

The entrance appears to have been through a hole in the roof. No evidence of roof material was found in the fill.

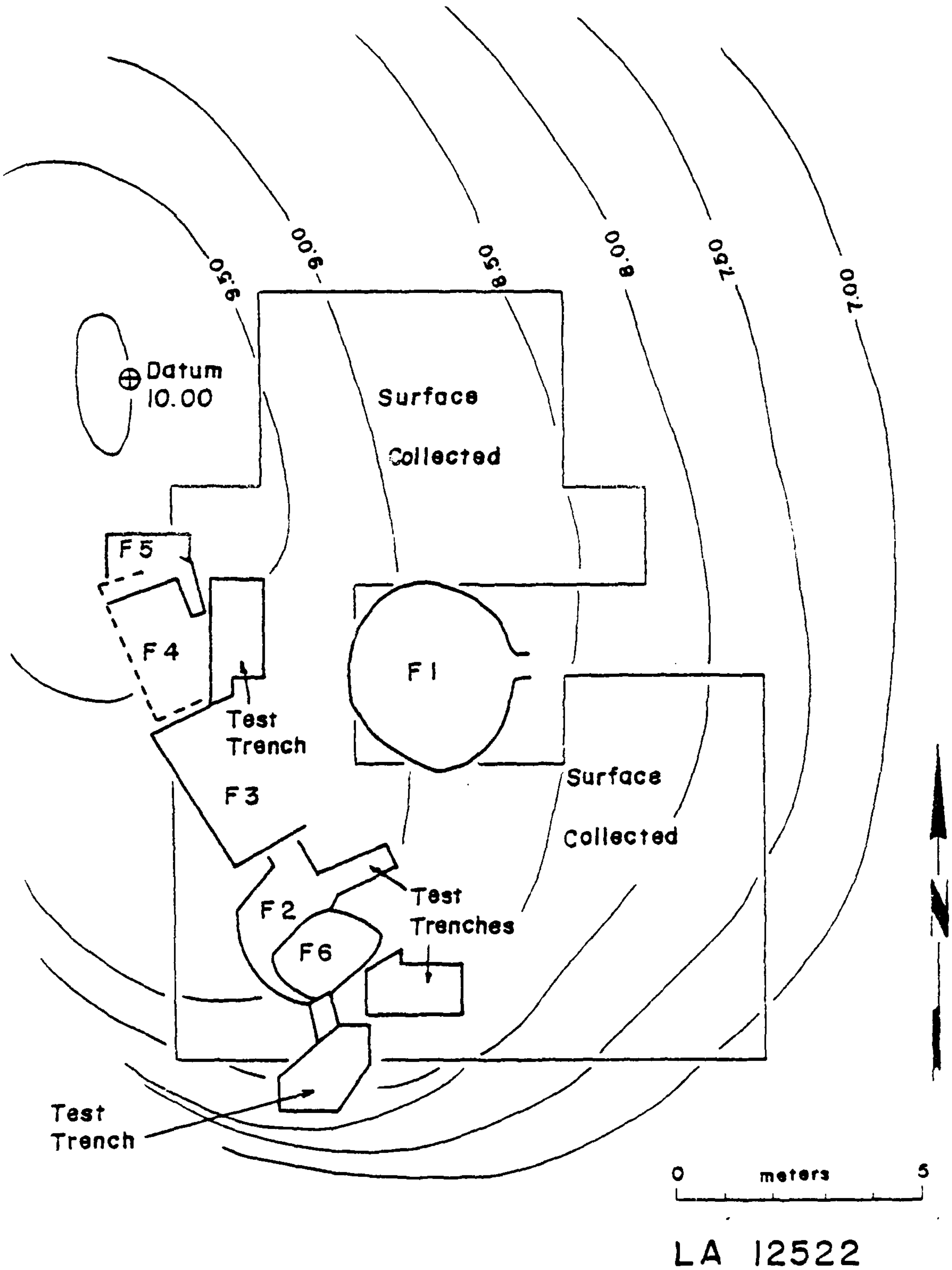
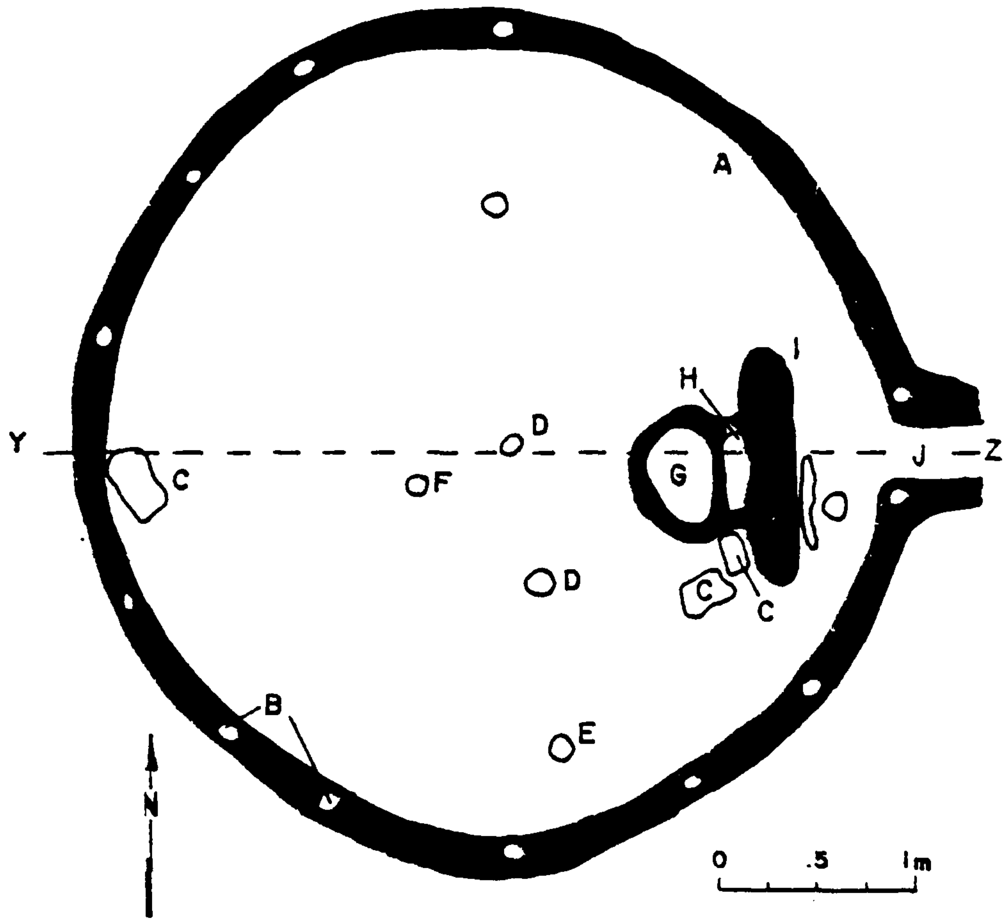


FIG. 3.24 LA 12522 Site Map

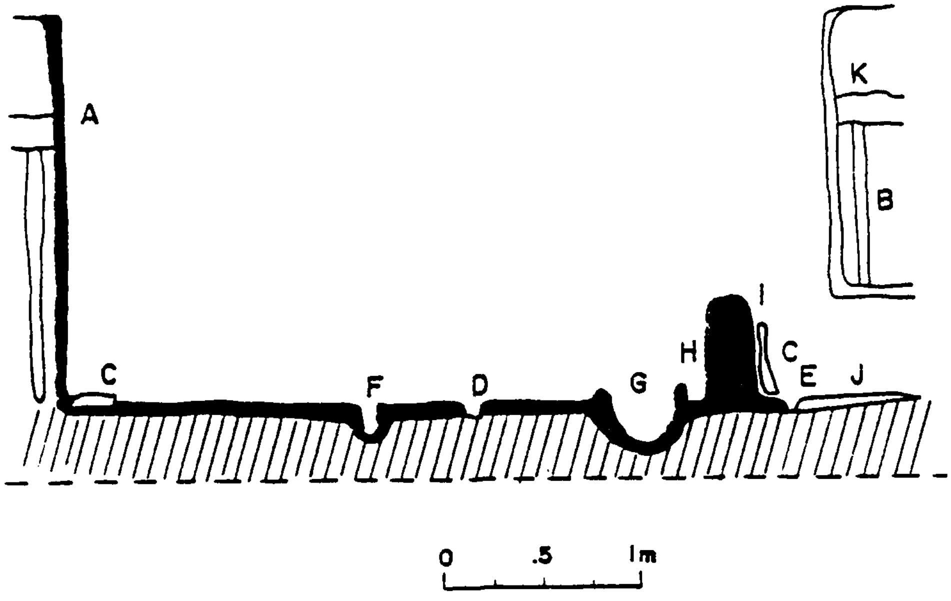


FEATURE I

LA 12522

A. Adobe plaster
B. Vertical posts
C. Stone slabs
D. Ladder holes
E. Post holes
F. Sipapu
G. Firepit
H. Ash pit
I. Deflector
J. Ventilator

FIG. 3.25 LA 12522 Feature 1, plan view



FEATURE I

LA 12522

A. Adobe plaster
B. Vertical posts
C. Stone slab
D. Ladder holes
E. Post hole
F. Sipapu
G. Firepit
H. Ash pit
I. Deflector
J. Ventilator
K. Charcoal layer

FIG. 3.26 LA 12522 Feature 1, cross sections

Feature 2

Feature 2 was the southernmost room in the four room complex and had been cut through during the construction of the subterranean room, Feature 6. The room was roughly semicircular with the west wall curving along the contour of the hill and continuing as the south wall. The north wall was straight and used jointly as the south wall of Feature 3 in the complex. The east wall and a portion of the north wall were completely missing. There west-south wall was 210cm long, 30cm wide and 87cm high. The north wall was 150cm long by 35cm wide by 45cm high. The room was approximately 250cm in diameter.

North and south walls were made of unmodified basalt stones taken from the talus. They had been laid horizontally and fixed with adobe mortar. The west wall had been dug into the hillslope to provide a level floor area. There was no evidence of plaster on these walls. The north wall was constructed of cobbles surrounded by adobe mortar with no plaster remaining. Most of the north and south walls were gone as was all of the east wall. The corners abutted and showed no signs of remodeling. The floor was 87cm below present ground level and was hard-packed adobe. No floor features or floor contact artifacts were uncovered. The fill was sand, gravel, and adobe with some sherds and lithics. No entrance was found.

Feature 3

Feature 3 is a featureless room adjacent to and north of Feature 2. It was directly west and upslope from the pithouse. The floor plan is rectangular with north and south walls serving also as walls for the connecting rooms. Feature 3 was 308cm by 186cm with the floor at 45cm below present ground surface.

The west, north and south walls had been dug into the hillslope. Wall thickness averaged 20cm to 30cm. The east wall and parts of the north and south walls had eroded away. The walls that remained were cobbles sunk into adobe mortar and plastered over. Plaster averaging about 0.5cm in thickness remained in patches on the west and north walls.

Most of the floor had been eroded away. The floor that was left was level hard packed adobe. There were no floor features in Feature 3. Fill in Feature 3 was sand,

gravel and adobe. There were two ash lenses in the fill but neither of these contained any cultural material.

Feature 4

Feature 4 was north of and contiguous with Feature 3. No walls were evident and the floor was almost entirely gone except around the hearth. The floor was packed adobe and may have been packed solely from usage. It was 28cm below present ground surface.

An adobe-rimmed, fire hardened hearth was uncovered in Feature 4. It was located with its center 140cm from the northeast corner of Feature 3 and 170cm from the northwest corner of Feature 3. The hearth was 60cm in diameter and 6cm in depth. No artifacts were found in the charcoal of the hearth.

Feature 5

Feature 5 was a hearth 20cm below present ground level with its center 328cm north of the northeast corner of Feature 3 and 400cm northeast of the northwest corner of Feature 3. The hearth was rimmed with fire hardened adobe and was 40cm in diameter and 6cm in depth. There was no evidence of walls or floor around Feature 5.

Feature 6

Feature 6 was a subterranean room found beneath Feature 2 with the south wall being utilized jointly by both rooms. Feature 6 is roughly rectangular with the long axis oriented northeast-southwest. The room was 190cm long and 150cm wide. Depth was 161cm below present ground level.

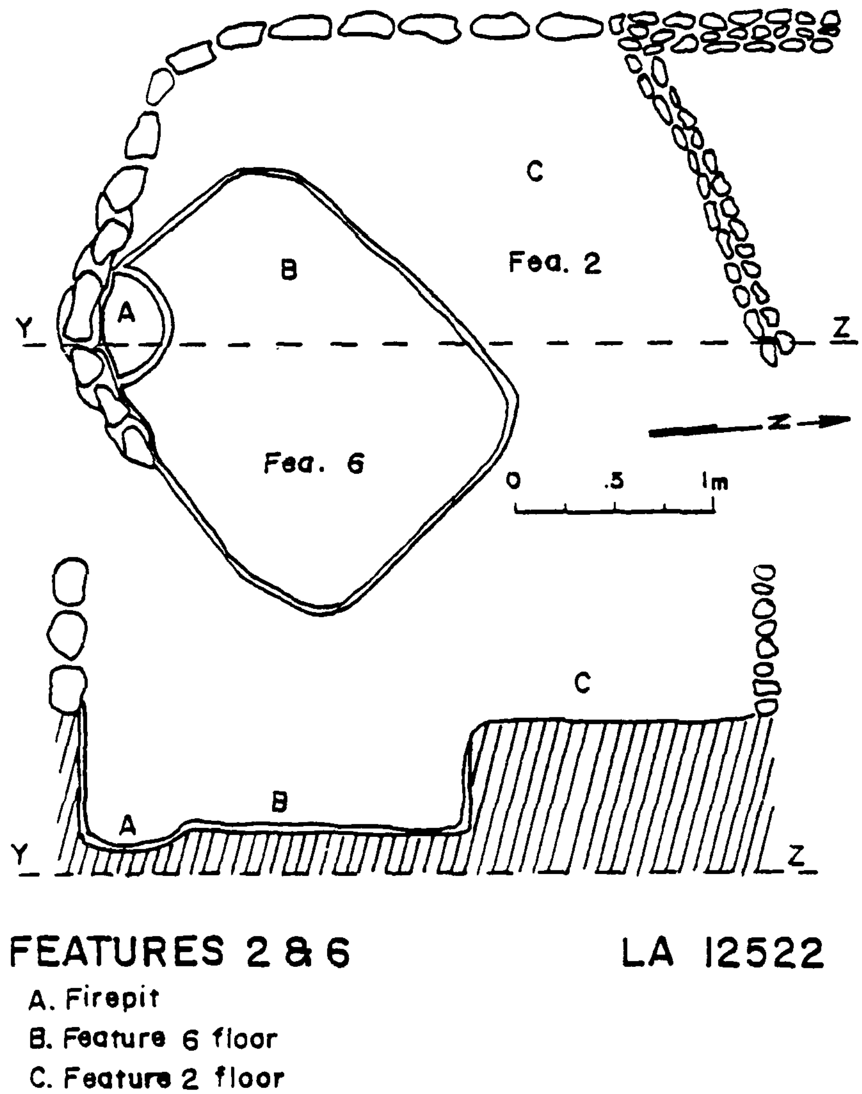


FIG. 3.27 LA 12522 Features 2 and 6, plan view and cross section

Walls were of adobe plaster placed directly over sterile soil. The plaster ranged from 0.25cm to 0.5cm inthickness and was not visibly smoked. The upper portions of the walls were gone except for that part which made up the south wall of Feature 2. This wall was 45cm high and averaged 30cm in thickness. It was made of unmodified basalt blocks laid horizontally in adobe mortar. This wall was unplastered.

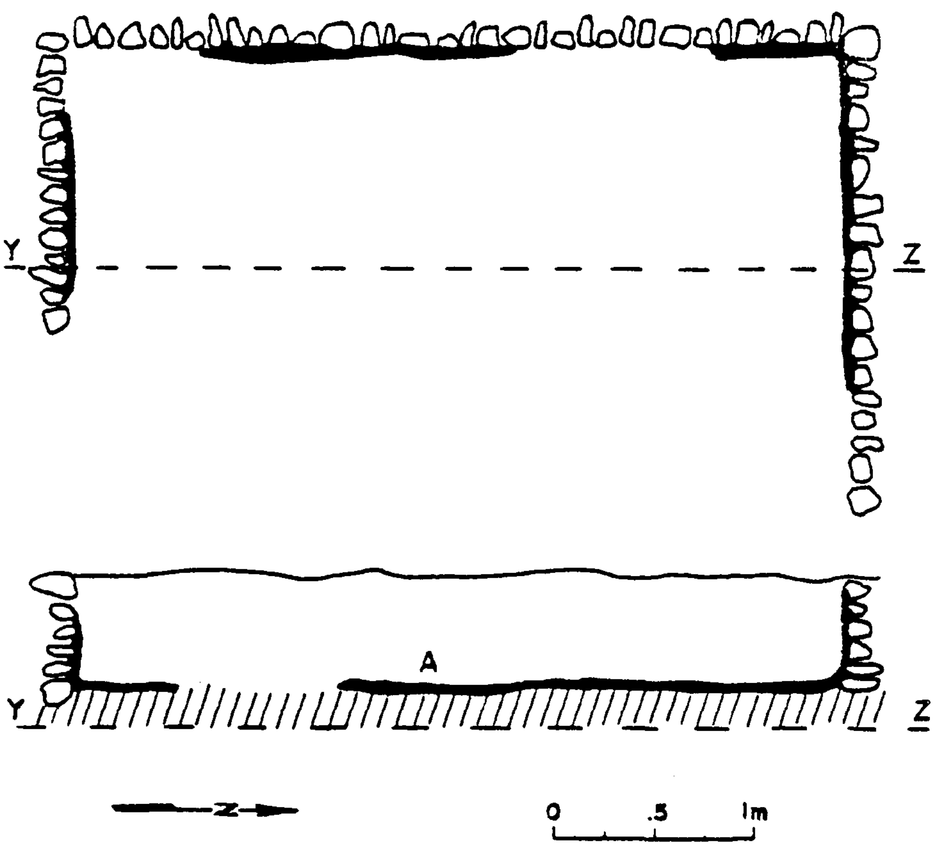
The floor was level, hard packed adobe and curved about 2cm up the walls. A small hearth with a fired adobe rim was in the southern corner of the room. It was 40cm in diameter and 7cm deep. There were no other floor features.

Discussion of Architecture

The architectural styles represented at LA 12522 can be separated temporally by comparison with other recorded sites in the upper Rio Grande district. Data based on this criterion alone would indicate the presence of no more than two occupational components at LA 12522.

The earliest component consisted of a linear surface roomblock associated with a circular subterranean structure which may have functioned as either a kiva, a comicile or both. The second and final component is represented by a rectangular subterranean pitroom. The domicile or both. The second and final component is represented by a rectangular subterranean pitroom. The excavation required in the construction of this structure had cut through the floor of one of the then-abandoned surface structures.

Although a second occupation surface had been postulated for the kiva-pithouse, it is thought that the melted adobe found represents roof and wall fall for several reasons. The sherds found in context with this adobe are of the same type found on the lower floor (Santa Fe Black-on-White). The presence of manos and metates on a roof would not be unexpected. The "floor" was fragmentary and puddled. No hearth was found on that level and a hearth would be expected if the depression were being utilized as a dwelling or windbreak for any length of time. Furthermore, roof material was not recovered from the lower fill.



FEATURE 3 LA 12522

A. Packed adobe floor

FIG. 3.28 LA 12522 Feature 3, plan view and cross section

As for the linear roomblock, we can only be sure of two contiguous rooms (Features 2 and 3). The central location of the hearth in Feature 4, coupled with the presence of considerable rubble in that area prior to excavation, allows the inference that it too was probably a surface room contiguous with Feature 3. We can be less confident that the hearth designated as Feature 5 is indicative of a surface room. It is more probable that Feature 5 is an exterior hearth or, because of its adobe construction, that it was associated with a jacal structure.

Linear roomblocks of adobe or stone masonry and jacals associated with circular, subterranean structures are common throughout the Anasazi area and are associated in the Rio Grande district with sherds of Kwahe'e Black-on-White and Santa Fe Black-on-White (Wendorf and Reed 1954:140-144).

The utilization of vertical sticks plastered over to act as wall supports for circular subterranean structures of this general time period is similarly well documented (Lange 1968:54; Wendorf and Reed 1954:141; Ellis 1975:41-52). A variant of this method was recorded at the Leaf Water Site (Luebben 1953:23) and at Riana Ruin (Hibben 1937:27). At any rate, the construction and the positioning of the floor features in Feature 1 are typical for rooms of this sort in the Rio Grande district. They are referred to in the literature as either pithouses or kivas. It is our opinion that a distinction of this sort cannot be made with any degree of accuracy due to the lack of distinctive kiva features present in the Rio Grande. The problems involved in such a definition are pointed out by Glassow (1971:225-226). Due to the superiority of subterranean structures for holding heat, it is probable that they often served a communal function. Whether that included ceremony is a moot question unless distinctive features or artifacts which can definitely be attributed to ceremony are found. In some instances either the relative size or the positioning of the feature or features within the site can be used as criteria (see LA 5014, this report).

The rectangular subterranean pit room (Feature 6) represents the sole architectural manifestation of the Glaze Period occupation. Contiguous pit rooms of this type have been reported from the flood plain below LA 12522 (LA 6455:Lange 1968:78-89). There they were associated with early Glaze Period ceramics. Feature 6 differs from those rooms in that it lacks a ventilator and additional floor features, however the corner fireplaces in Feature 6 has parallels in the contiguous roomblock reported at LA 6455. Thus, it seems probable that Feature 6 represents a Glaze Period field house which was constructed after the Black-on-White component was abandoned.

Ceramics

The ceramics of LA 12522 may be discussed in terms of two temporal components. The first component is represented by a variety of matte black-on-white decorated ceramics, while the second component is characterized by glaze paint decorated wares.

The dominant pottery type of the first component is Santa Fe Black-on-White (white slipped variety) and an almost equal amount of Santa Fe Black-on-White (blue-gray variety). Unfortunately trash areas which might have shed light on the possible temporal differences of these two varieties were not revealed by excavation.

Minute quantities of Kwahe'e Black-on-White, Red Mesa Black-on-White and unidentified mineral-painted wares were present. However, due to their provenience and scarcity, these sherds are not thought to represent an earlier component.

The presence of Wiyo Black-on-White, also in minute quantities, might be attributed to either of the components. All sherds typed as Wiyo Black-on-White were collected from the surface.

In retrospect, the ceramics associated with the first component indicate a relatively long occupation when one considers the presence of both Kwahe'e Black-on-White and Wiyo Black-on-White. However, the limited quantity and lack of context of these types in conjunction with a high relative percentage of Santa Fe Black-on-White allows only the temporal designation of early to late 13th century.

With the exception of Feature 1, it was impossible to assign rooms to specific components using the ceramic concentrations. One room is attributed to the second component by means of the architecture (see architectural discussion).

Decorated ceramic types assignable to the second component are Arenal Glaze Polychrome, Cieneguilla Glaze-on-Yellow, San Clemente Glaze Polychrome, Largo Glaze-on-Yellow, and Espinoza Glaze Polychrome. These types span a period from Glaze I (A.D. 1350) to Glaze III (A.D. 1450+). As only one structure is attributed to this temporally diverse ceramic assemblage, it is probable that the second component of LA 12522 represents a field house occupied seasonally for many years.

TABLE 3.9

CERAMIC ASSEMBLAGE—LA 12522

Total Sherds	No.	%
Red Mesa B/W	1	.18
Kwahe'e B/W	10	1.80
Mineral Paint Intrusives	3	.54
Santa Fe B/W		
white slipped	116	20.90
blue-grey slipped/floated	80	14.41
Wiyo B/W	12	2.16
San Clemente G/Poly	6	1.08
Cieneguilla G/Y	6	1.08
Largo G/Y	4	.72
Arenal G/Poly	1	.18
Espinoza G/Poly	5	.90
Corr./Oblique Indented	164	29.54
Corr./Ribbed	17	3.06
Corr./Flattened	15	2.70
Plain/Body	106	19.09
	555	99.96

Feature 1 (Roof context)		
Santa Fe B/W		
white slipped	4	11.76
blue-grey slipped/floated	12	35.29
Corr./Oblique	11	32.35
Corr./Ribbed	4	11.76
Plain/Body	3	8.82
	34	99.98

TABLE 3.9 (con't)

Total Sherds	No.	%
Feature 1 (Floor context)		
Kwahe'e B/W	1	2.0
Santa Fe B/W		
white slipped	5	10.0
blue-grey slipped/floated	7	14.0*
Corr./Oblique Indented	32	64.0†
Corr./Ribbed	2	4.0
Corr./Flattened	2	4.0
Plain/Body	1	2.0
	50	100.0

* Restorable bowl - Santa Fe B/W
\+ Restorable jar - combination of corr./ribbed and corr./oblique indented

Feature 2		
Kwahe'e B/W	1	3.57
Santa Fe B/W		
white slipped	4	14.28
blue-grey slipped/floated	2	7.14
San Clemente G/Poly	2	7.14
Cieneguilla G/Y	1	3.57
Largo G/Y	1	3.57
Corr./Oblique Indented	7	25.00
Corr./Ribbed	1	3.57
Plain/Body	9	32.14
	28	99.98

Feature 3		
Kwahe'e B/W	2	4.65
Santa Fe B/W		
white slipped	22	51.16
blue-grey slipped/floated	1	2.32
San Clemente G/Poly	1	2.32
Cieneguilla G/Y	3	6.97
Espinoza G/Poly	1	2.32
Corr./Oblique Indented	3	6.97
Plain/Body	10	23.25
	43	99.96

Feature 4		
Santa Fe B/W		
white slipped	2	9.09
blue-grey slipped/floated	1	4.54
Corr./Oblique Indented	14	63.53
Plain/Body	5	22.72
	22	99.98

Feature 5		
Santa Fe B/W (white slipped)	1	100.00

Feature 6		
Santa Fe B/W		
white slipped	4	17.39
blue-grey slipped/floated	2	8.69
Cieneguilla G/Y	2	8.69
Espinoza G/Poly	1	4.34
Corr./Ribbed	1	4.34
Plain/Body	13	56.52
	23	99.97

Other

Feature 1: three quadrangular sherds, all Santa Fe Black-on-White (white slipped). Two are worked on one edge; the third is worked on four edges and exhibits elongated striae running perpendicular to one edge on the exterior, undecorated surface.

Feature 6: quadrangular shaped sherd, Santa Fe Black-on-White (blue slipped) with one worked edge.

Lithics

The majority of the lithic assemblage from LA 12522 was collected either from the surface or from the upper fill of the pithouse. Although there were at least two occupational components on the site, it was not possible to separate the lithic assemblages accordingly.

Due to the consistent occurence of waterworn cortex throughout the assemblage, it would seem probable that both occupations were obtaining their material from the riverbed and nearby alluvial deposits. Basalt (28.6%), chert (36.8%) and chalcedony (23.1%) were the most available materials judging from the high percentage of cores and debitage assigned to those types. Obsidian (9.0%) occured in lesser quantities with probably not more than three cobbles represented in the assemblage. Quartzite (1.5%), rhyolite (0.4%) and silicified wood (0.1%) were present in diminishing quantities.

The major focus of the reduction activities at LA 12522 seems to have been the production of simple flake tools. Only two of the lithics analyzed were the possible result of biface production. Both were obsidian.

Wear patterns formed by scraping action were observed on eleven basalt flakes, on basalt "chopper," four chert flakes, four obsidian flakes, one chalcedony flake and an angular quartzite fragment. Wear formed by cutting action was represented on a single obsidian flake. Sawing wear occurred on three basalt flakes, one rhyolite flake and one chert flake. Cortex was used as backing on 19 of the 28 flake tools (67%), regardless of the type of wear present. One chert flake exhibiting scraping wear was backed by transverse flake removal.

With the exception of a single specimen, all of the ground stone was recovered from room fill. The upper fill of Feature 1 yielded one trough metate with an associated rectangular mano, two mano fragments and a mano blank. A unifacially ground, rectangular shaped mano was found on the floor of Feature 1. Feature 2 yielded two fragments of a slab metate. One unshaped

mano, one mano fragment and one rectangular (two handed) mano were recovered from Feature 4. A single granite mano displaying battered edges was collected from the surface.

Utilized Lithic Material

Wear
(All measurements are in millimeters unless otherwise designated. L, W and Th mean Length, Width and Thickness.)

Scraping

Quartzite— L-42, W-22, Th-14; utilized angular fragment (not a flake), unifacial microflake removal on concave edge.

Basalt— L-48, W-32, Th-12; smoothing and rounding on concave edge; cortex backing.

Chert— L-44, W-38, Th-8; unifacial microflake removal on straight edge; no backing.

Basalt— L-71, W-87, Th-15; unifacial microflake removal on convex edge, striae in all directions; no backing.

Obsidian— Not measured; whole flake with cortex, unifacial microflake removal on straight edge; cortex backing.

Basalt— L-68, W-41, Th-15; unifacial microflake removal on adjoining concave-convex edges, polishing evident; cortex backing.

Obsidian— L-27, W-22, Th-8; unifacial microflake removal on convex edge; cortex backing.

Chert— L-51, W-43, Th-16; unifacial microflake removal on concave edge; cortex backing.

Chert— L-40, W-33, Th-20; unifacial microflake removal on convex edge; backing formed by transverse flake removal.

Chert— L-42, W-35, Th-11; bifacial microflake removal on convex edge; no backing.

Obsidian— L-30, W-23, Th-6; unifacial microflake removal on concave edge; no backing.

Basalt— L-52, W-41, Th-18; unifacial microflake removal and polish on high points of concave edge; cortex backing.

Basalt— L-58, W-41, Th-14; unifacial microflake removal and polish on high points of concave edge; cortex backing.

Basalt— L-33, W-30, Th-7; unifacial microflake removal and rounding on convex edge; cortex backing.

TABLE 3.10

LITHIC ASSEMBLAGE–LA12522

	WF with Cortex		WF without Cortex		PF or ND Shatter with Cortex		PF or ND Shatter without Cortex		Cores with Cortex		Cores without Cortex		Material in Total Assemblage	
MATERIAL	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Obsidian	29	43.9	10	15.1	16	24.2	8	12.1	3	4.5	–	–	66	9.0
Obsidian (green banded)	–	–	–	–	–	–	–	–	–	–	–	–	0	0.0
Chalcedony	89	52.3	34	20.0	22	12.9	15	8.8	3	4.5	–	–	170	23.1
Chalcedony with milky white & other inclusions	1	25.0	2	50.0	–	–	1	25.0	–	–	–	–	4	0.5
Basalt	109	51.7	59	28.0	13	6.2	18	8.5	12	5.7	–	–	211	28.6
Chert	134	49.4	56	20.7	37	13.7	27	10.0	16	5.9	1	0.4	271	36.8
Rhyolite	3	100.0	–	–	–	–	–	–	–	–	–	–	3	0.4
Quartzite	6	54.5	1	9.1	2	18.2	–	–	2	18.2	–	–	11	1.5
Silicified Wood	1	100.0	–	–	–	–	–	–	–	–	–	–	1	0.1

KEY: Wf - whole flake
PF - partial flake
ND - nondiagnostic

Basalt— L-39, W-44, Th-9; unifacial microflake removal on straight edge, polishing on high points; no backing.

Basalt— *Core tool*; large flakes removed from opposite end, typology would designate it to be a chopper, however, edges display rounding, not battering; cortex backing; weight—408 grams.

Basalt— L-50, W-38, Th-20; edge rounding on obtuse angle, probably used on hard material.

Basalt— L-57, W-51, Th-20; unifacial microflake removal on concave edge; cortex backing.

Basalt— L-45, W-72, Th-6; unifacial microflake removal on straight edge, polishing on high points; cortex backing.

Obsidian— L-32, W-23, Th-8; unifacial microflake removal on concave edge; cortex backing.

Chalcedony— L-30, W-29, Th-9; unifacial microflake removal on concave edge; no backing.

Basalt— L-53, W-48, Th-14; bifacial microflake removal on convex edge. polishing and striae on one edge face; no backing.

Cutting

Obsidian— L-56, W-24, Th-14; bifacial microflake removal on concave edge; cortex backing.

Sawing

Chert— L-53, W-25, Th-8; bifacial microflake removal on straight edge; cortex backing.

Rhyolite— L-49, W-56, Th-22; edge rounding and inconsistent bifacial microflake removal on convex edge; cortex backing

Basalt— L-63, W-28, Th-12; bifacial microflake removal and polishing on high points of convex edge; cortex backing.

Basalt— L-41, W-20, Th-10; bifacial microflake removal on convex edge; cortex backing.

Basalt— L-30, W-26, Th-9; bifacial microflake removal and polish on high points of convex edge; no backing.

Scraping-Engraving

Obsidian— L-30, W-18, Th-4; unifacial microflake removal on concave edge, rounding on adjoining acuminate; cortex backing.

Scraping-Cutting

Chert— L-33, W-34, Th-14. bifacial microflake removal on straight edge; cortex backing.

Chopping

Basalt— L-93, W-68, Th-35; bifacially flaked convex edge exhibits battering; two flakes removed for backing.

Projectile Point

Obsidian— L-20, W-11, Th-3; side-notched biface with square base.

Other

Obsidian— bifacially flaked preform broken by end shock.

Basalt— L-14, W-16, Th-2; partial flake without cortex, sidenotched, but otherwise unaltered.

Ground Stone

Mano— Granite; L-94, W-64, Th-18; grinding on both faces and battering on edges; weight- 178 grams.

Feature 1 - Upper Level

Mano— Vesicular basalt; L-230, W-125, Th-35; rectangular, exhibits grinding on both faces, striae are parallel to short axis.

Trough Metate— Vesicular basalt; not measured; striae parallel to long axis.

Mano fragment— Granite; grinding on one face; wieght- 85 grams.

Mano fragment— Sandstone; grinding on both faces; weight- 84 grams.

Granite— L-105, W-125, Th-32; battering on edges, possibly an attempt at shaping of a mano blank.

Feature 1 - Lower Level

Mano— Vesicular basalt; shaped on four edges by flake removal, grinding on one face only, striae parallel to short axis.

Feature 2

Slab Metate— Vesicular basalt; two fragments, striae parallel to long axis.

Feature 4

Mano— Vesicular basalt; unshaped, ground on both faces.

Mano fragment— Vesicular basalt; adjusted L-115, W-138, Th-32; shaped, rectangular.

Mano— Vesicular basalt; L-205, W-110, Th-36; shaped on one edge and one end.

Comment

It is probable that the Pueblo III component at LA 12522 represents a perennial occupation. While the small quantities of early (Kwahe'e Black-on-White, Red Mesa Black-on-White) and late (Wiyo Black-on-White) sherds do not allow the definition of distinct components their presence does suggest that the occupation was long lived.

Situated at the mouth of White Rock Canyon, the inhabitants were near both the Rio Grande flood plain and the plateau areas. If a situation of environmental stress did exist in the Cochiti area during the thirteenth century (see LA 5014, this report), the location of LA 12522 would be ideal for the exploitation of a variety of life zones. This would account for the postulated longevity of its occupation when compared to the other Pueblo III sites discussed in this report.

The second component (P-IV) is thought to represent a seasonal occupation. However, the closeness of the site to the large pueblos on the floodplain and the presence of a hearth would allow the possibility that the site was occupied throughout the year, although perhaps intermittently. The presence of a single corn cob in the second component indicates that corn agriculture played an important role in the subsistence strategy employed, however, the gathering of natural resources no doubt assumed seasonal importance.

PROBLEM ORIENTATION FOR FUTURE WORK IN THE UPPER RIO GRANDE REGION

As is the case with archeological research in any area, considerable work is yet needed before sufficient data are generated to elucidate prehistoric cultural processes in the Upper Rio Grande region, in particular, the Cochiti area, with any degree of certainty. The following discussion attempts to define problems which came to our attention during the course of this project.

The analysis of ceramics recovered from prehistoric sites has long been a focal point of archeological research in the Southwest. This emphasis frequently has been subject to criticism as ceramic data have often been used as the sole means of interpretation. Regardless of the bias of the archeologist, ceramics constitute a major portion of the material culture present in the Southwest and can act as both a temporal and cultural indicator. When defining the interaction operative in any prehistoric cultural system, it becomes imperative to determine what happened first and who was involved.

The ceramic types defined for the Cochiti area are useful when discussing gross time spans, but at present there are no reliable ceramic criteria by which those time periods can be subdivided to gain a temporal perspective of cultural process within the time range of any particular ceramic type. Biella and Chapman (1975:170) make note of this analytical problem.

The potential for further temporal separation of the known ceramic types has been discussed in Chapter 2 of this report and the potentially significant attributes defined. Future ceramic analysis in the area should be addressed to these technological attributes and pay less attention to color (which is affected by the firing atmosphere) and design motifs (which are difficult to work with unless whole vessels are recovered). Admittedly, a stratified site is necessary before such analyses can become temporally meaningful, but these attributes should be separated in the ceramic analysis of any site until their validity as temporal indicators is determined. Otherwise, if they do prove to be valid, the previous ceramic data cannot be used to make temporal, cultural or regional divisions.

The problems involved in defining room function in Pueblo III sites and the potential effect the results might have on population estimates have been discussed. Unfortunately, little is known regarding the storage facilities of the earlier pithouse villages. It is suggested here that an emphasis be placed on the excavation of the surface areas between pithouses in order to obtain similar information regarding the ratio of living quarters [illegible] storage facilities and their relationship [illegible] terms of the economic system. [illegible] bably best be dealt with [illegible] and total floor space [illegible] storage areas [illegible]

Pithouses are often difficult to define on the surface. This fact affects the validity of population estimates based on survey data not only for the early periods (Basketmaker II and III) but for the later periods (Pueblo I, II and III) when pithouses saw continued use as domiciles even after the advent of surface dwellings. The problems of definition regarding kivas and pithouses in such sites have been discussed in this chapter (LA 5014 and LA 12522). Remote sensing through aerial photography and the use of a proton magnetometer may aid in determining the validity of the present sample of known and suspected pithouses.

That people from the west begin to occupy the Rio Grande area during Pueblo III and early Pueblo IV is unquestioned. The extent to which the indigenous population of the Cochiti area was immediately affected by outside groups is unknown. The presence of southern recesses in LA 5014 and LA 4997 (Snow 1974), coupled with minute amounts of Galisteo B/W pottery suggest that direct interaction with people from the San Juan-Chaco Canyon area had begun by A.D. 1250.

Glaze-decorated ceramics replace Santa Fe B/W as the dominant ceramic type in the Cochiti area. They are associated with large Pueblo IV pueblos and associated field houses. These large pueblos are distinguished from the Pueblo III sites containing Santa Fe B/W by a variety of new architectural features (rectangular surface kivas, etc.). In most areas of the Rio Grande, the large Pueblo IV pueblos are thought to be a result of the aggregation of people from the smaller pueblos. However, a review of the available data shows that while Pueblo III sherds are present in the Pueblo IV sites of the Cochiti area (Lange 1968), their frequency is not high enough to accept immediately the concept of a cultural continuum. The excavation of LA 12522 revealed a distinct temporal hiatus between the Pueblo III and Pueblo IV components. According available survey data, only 40% of the large Pueblo IV sites in the area possess Pueblo III components (Biella and Chapman 1975:183). Future excavation should be directed at determining the degree of cultural homogeneity of these components.

Present survey data show that sites containing Wiyo B/W, which is thought to be technologically derived from Santa Fe B/W, cluster to the north of the Cochiti area. The Chama Valley is not thought to have been occupied by an Anasazi population until A.D. 1300 (Wendorf 1953:94), when large sites dominated by Wiyo B/W appear. If the adverse environmental conditions suggested in this chapter did occur during the middle and late 18th century, an exodus to previously undeveloped areas may well have occurred. A direct line of transition can be observed from Wiyo B/W through the Biscuit wares to the historic Tewa Polychromes. The population (Tewa) responsible for this ceramic sequence never adopted the use of glaze decoration and maintained the simple circular subterranean kiva form and other architectural styles of the early Rio Grande sequence (Wendorf and Reed 1955:151-152). Architectural parallels drawn between LA 5014, LA 12522 and the Chama Valley sites in this chapter reflect this continuity.

[illegible] glaze-decorated ceramics. [illegible] variety of new architectural [illegible] an outside group [illegible] support [illegible] Pueblo IV

lends credence to the suggestion. Certainly a remnant of the indigenous group may have remained in the area to be assimilated by the new arrivals. The large P-IV pueblos were no-doubt made possible by improved agricultural practices developed elsewhere and a wide spread system of seasonal field houses. The large Tewa pueblos to the north soon adopted both. Survey data show that terrace locations are more frequently associated with Pueblo IV component sites than with Pueblo III sites (Biella and Chapman 1977).

In truth all too little is known to do more than conjecture. It is hoped that Chapters 2 and 3 have outlined the foundations for testable inferences regarding the prehistory of the northern Rio Grande region. Oppotunities to obtain data pertinent to regional and temporal environmental variability throughout the cultural sequence of the area should be exploited. Data of this type are dependent not only upon site preservation but far too often the funding available to conduct such an analysis. The potential information derived from such studies is necessary before we can talk with any assurance of cultural process in the Upper Rio Grande.

SECTION III:
EXCAVATION OF TWENTY-SEVEN SITES IN THE PERMANENT POOL OF COCHITI RESERVOIR

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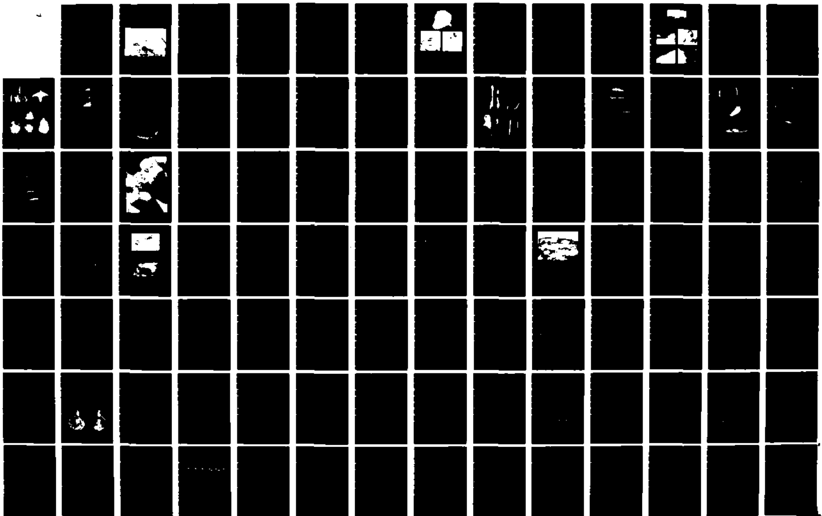
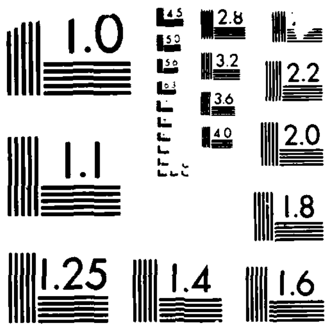
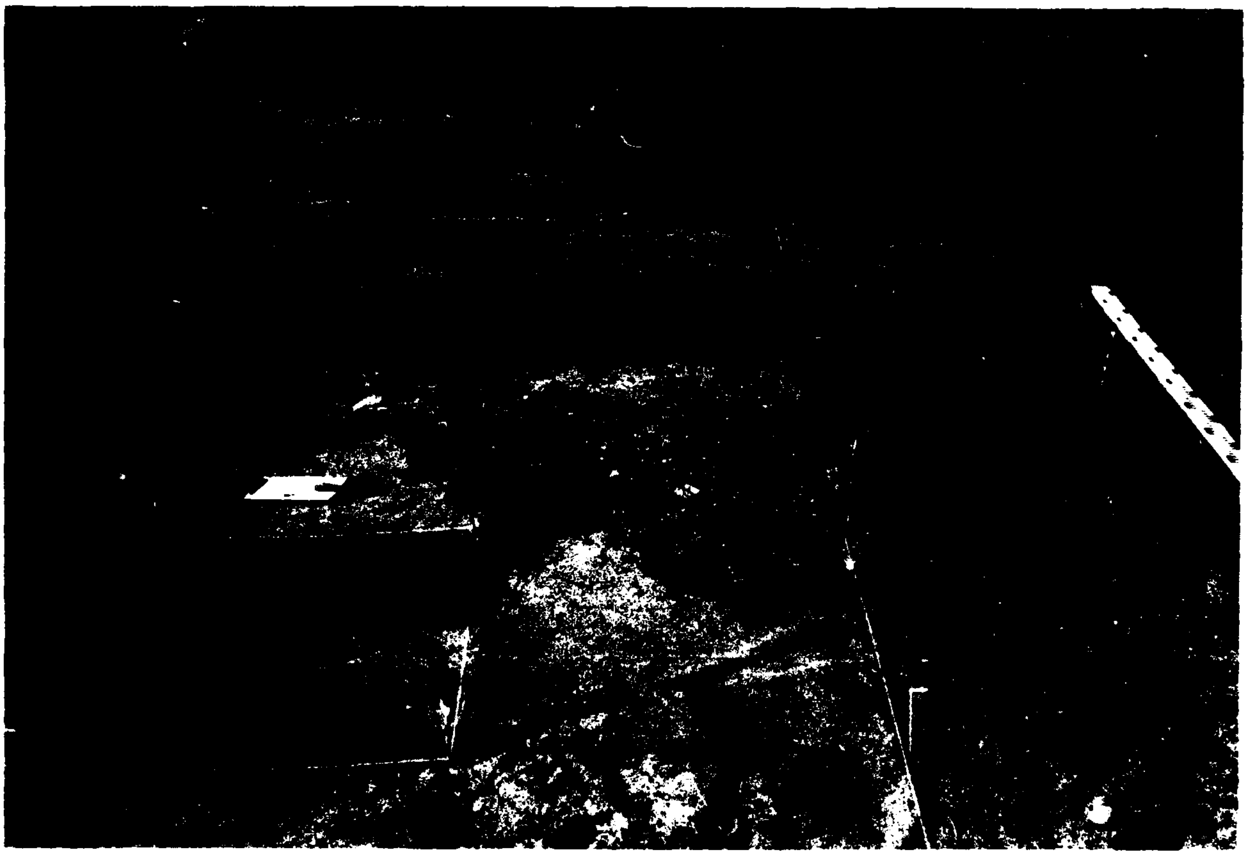




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

SECTION III:
EXCAVATION OF TWENTY-SEVEN SITES IN THE PERMANENT POOL OF COCHITI RESERVOIR



Chapter 4
Methodology of Lithic Analysis

RICHARD C. CHAPMAN and JEANNE A. SCHUTT

OBJECTIVES

Analysis of artifacts manufactured from stone materials was directed toward gathering data which could be used as information about three general realms of human behavior. These included information concerning the behavior of material selection for tool manufacture, information concerning the specific methods or techniques through which tools were manufactured, and information concerning the specific ways in which tools were ultimately used by human populations within the study area.

Archeological remains constitute a relatively static record of past human behavior, although the behavior resulting in their deposition is generally understood as a set of dynamically interrelated processes of adaptation. Stone artifacts are thus viewed as material by-products of past human behavior, which through analysis can be used as data to inform about the processes underlying their manufacture, use and deposition upon the landscape.

The first step in such analysis involves delineation of attribute variability which can be monitored through either nominal or interval measurement. Attributes must be selected for their potential relevance as data pertinent to a set of problems, which in this case concerned strategies of material selection, manufacture and use of tools.

To resolve possible confusion in terminology, a distinction will be made in the use of the terms "artifact" and "tool." *Artifacts* are defined as all objects or material phenomena which have undergone some transformation from their natural state due to the activity of a human agent. *Tools* are defined as all artifacts which exhibit observable evidence of having been used by a human agent to apply force to some other object or material.

An unutilized core or an unutilized piece of debitage detached from a core are thus artifacts, but not tools. If, however, these artifacts are used by a human agent to apply force to some material in a manner which produces observable evidence of that utilization upon some part of the artifacts, they can be termed tools.

It is critical to note that analysis directed toward description and explanation of technological behavior must involve consideration not only of tools, but as well of artifacts generated as by-products of tool manufacture and tool use. It is equally critical to note that description and measurement of attribute variability is just the first step in such analysis. Once attributes have been described and measured, they must be used as data in a variety of analyses directed explicitly toward solution of particular problems concerning the behavioral determinants of artifact manufacture, use and deposition in the past.

In general, two analytical approaches are taken with stone artifact data. The first aproach is oriented toward providing a description of material selection, tool manufacture and tool use activities engaged in by personnel who occupied each site location in the past. This description quite often necessitates preliminary analysis to define both behavioral and post-depositional erosional contexts which conditioned spatial distribution of artifacts within site locations. The results of these analyses and descriptions of activities are presented in each site description.

The second analytical approach taken with stone artifact data is oriented toward defining overall strategies of material selection, tool manufacture and tool use implemented by past human populations within the study area. This analysis involves intersite comparison of stone artifact assemblages recovered from site locations which were occupied contemporaneously. The analysis is directed ultimately toward description of logistical strategies through which stone tool manufacture and usage activities at specific sites were integrated into an adaptive system of food procurement, processing, storage and consumptive behavior within the region. The results of this second analytical approach are presented in the final chapters of the report.

The following discussion will treat the general problems concerning human behavior toward which the stone artifact analysis was ultimately directed, and will outline in general fashion the kinds of attribute variability relevant to those problems.

Material Selection

Raw materials suitable for manufacture and use as tools exhibit considerable variability in composition and distribution within the study area. Materials most commonly selected for tool manufacture range in kind from volcanic obsidians and basalts to a variety of cherts, chalcedonies and quartzites. An exhaustive list of materials from which artifacts have been manufactured, their description and source areas are given in Warren (1977).

Documentation of the kinds of materials selected for manufacture into tools at different site locations can be informative about several behavioral concerns. If the source areas of those materials is known, such documentation can provide insight into the dynamics of past population movement within a region or between different regions. Through ancillary analysis, it can be determined within certain limitations whether materials were being circulated between site locations throughout a region as manufactured trade items, or whether human population segments were themselves moving between those site locations. With respect to the study area, documentation of material variability is especially critical in isolating the degree of mobility of past populations engaged in a nonagricultural foraging strategy of adaptation, and of ascertaining the degree to which populations

engaged in an agriculturally based adaptation were mobile or essentially sedentary throughout all seasons of the year.

A second concern of material variability resides in the degree to which their physical composition affected specific techniques of manufacture employed by a given population to make tools. Raw materials are available in their natural state as a range of masses, shapes and internal structural characteristics which make some more amenable to specific manufacturing techniques than others. The degree to which a given human population adapted their techniques of manufacture to locally available materials, or invested time and energy into selection and transportation of particular materials to fit the needs of their manufacturing techniques provides an indirect monitor of the degree of specialization in tool manufacture characterizing particular adaptive systems in the past.

A third concern of material variability resides in the capability of different materials to do different kinds of "work" as tools, given their physical composition. Experimental analysis conducted during the course of the Cochiti Reservoir Project demonstrated, as have other studies, that materials exhibit considerable variability in efficiency of performance as tools dependent upon the kinds of tasks being undertaken and the composition of materials being operated upon. Monitoring material variability among artifacts employed as tools thus provides a potentially informative body of data through which activities actually performed with tools can be isolated within and between site locations in the past.

Reduction Technique

The term "reduction" as used here refers to a stage-like set of procedures through which tools are manufactured from pieces of raw material. In a general sense, stages of reduction occurring at a site location can be isolated through examining the artifactual by-products of particular material types. Unaltered raw materials exhibit an outer cortex which has formed as a function of weathering and/or mechanical alteration through geological time (such as water rolling, sand blasting, etc.). Manufacture of tools from silicious materials such as obsidians, basalts, cherts, chalcedonies and quartzites commonly involves controlled percussion techniques to detach pieces from the parent material either suitable for use "as is" for tools or suitable for further modification into tools.

Evidence of initial stages of reduction are thus observable as pieces of debitage detached from the parent material which exhibit remnant portions of that outer cortex on their dorsal surfaces. The piece of parent material will be characterized by a series of scars defined by shock waves which fractured pieces of debitage from it, and is termed a "core." These scars will, of course, not exhibit cortex.

Once the cortex has been substantially removed from a piece of parent material, secondary stages of reduction will result in detachment of debitage which do not exhibit cortex on their dorsal surfaces. The core from which debitage is removed will become progressively smaller in mass as reduction continues, and will eventually become so small that no more debitage of a potentially utilizable size or shape can be detached.

Tertiary stages of reduction beyond those involved in debitage removal from cores can be recognized through documentation of a different set of attributes as well. These stages involve alteration of pieces of debitage through either percussion or pressure techniques to transform the overall shape of the debitage, or some portion of the perimeter of the debitage, into a specific form necessary for its final utilization as a tool. During this stage of reduction, a piece of debitage is essentially treated as a "core," in that even smaller pieces of debitage are detached from it. This process is termed "retouching" and the scars resulting on the debitage being retouched are referred to as "retouch" scars. A single piece of debitage detached through retouching is termed in this analysis a "retouch flake," and can be identified through examination of its platform characteristics, which differ considerably from the platform characteristics of a piece of debitage detached from a core. The reader is referred to the definitions in the following section for description and illustrations of these characteristics.

Retouching can occur in two contexts of reduction: first in the context of initial tool manufacture as outlined above, and second in the context of tool use. Edges of tools become dull through usage, and can be resharpened through retouch detachment of the dull portions of edge perimeters. Pieces of debitage detached for this reason can be distinguished in many (although not all) cases from debitage detached as a function of initial manufacture of an edge, and are termed "resharpening flakes" in this analysis.

It can be seen, then, that manufacture of stone tools is a stage-like process that results in production of a great number of artifactual by-products. The majority of these by-products are not used as tools, but are rather left "on the spot" as material evidence that a particular stage of reduction took place in the past. Through examination of attribute variability exhibited among debitage and core assemblages deposited at site or provenience locations, stages in reduction and use of tools can be defined. Attributes informative of reduction stage include cortex kind and placement, platform morphology, retouch, and size and weight of both debitage and cores.

Analysis of tool manufacture is directed initially toward description of reduction stages evident at each provenience and site location, and the results of this analysis are presented in the site descriptions.

A second kind of information which can be ascertained through analysis of tool manufacture by-products concerns the logistical strategy through which a particular human population attempted to solve a basic problem common to all cultural adaptations: that of "getting" raw materials from which tools must be manufactured (which occur at a finite number of locations across the landscape) to specific locations where tools must be used.

The simplest strategic solution to this problem is often apparent as a fact of existence. If locations where tools are needed to procure or process foodstuffs are situated nearby sources of raw materials suitable for manufacture of such tools, all stages of manufacture can be undertaken at those site locations.

If, however, locations of tool-use need are situated at some distance from sources of raw materials available for tool manufacture, alternative strategies of reduction must be employed. Transportation of unaltered parent material from its source location to a site of tool-use need is generally not feasible in terms of time or energy expenditure. One solution to this problem involves initial reduction of the parent material at its source loca-

tion to manufacture debitage suitable for usage without further modification or only minimal modification. The resultant debitage can then be much more easily transported over greater distance to the site locations of tool-use need than could unmodified raw material.

If this kind of strategic solution is undertaken, archeological evidence of its implementation will be manifest as two distinctly different assemblages of artifactual by-products. The site location of initial reduction will be characterized by high frequencies of debitage exhibiting cortex, no "retouch" flakes or cores, and no evidence of tool usage in the form of utilized debitage or "resharpening" flakes. The site location where tools were used, on the other hand, will be characterized by no cores, very low frequencies of debitage exhibiting cortex, high frequencies of debitage utilization, and (given some contexts of tool use) the presence of "resharpening" flakes.

It is clear that a variety of reduction strategies can be expected to have been implemented by given systems of adaptation in the past. Determination of exactly how a particular human population strategically accommodated the distribution of raw materials available for tool manufacture to their particular needs of tool usage within a region, can, however, be defined to a large extent through examination of site-specific assemblages of debris resultant from reduction of materials for which source location is known.

The results of analysis directed toward description of overall reduction strategies employed by past populations within the study area are presented in the final chapters of the report.

Tool Use

Utilization of artifacts as tools can be undertaken at any stage of the reduction process. Evidence of utilization *per se* is observed as variability among *wear patterns*, or alteration of some portions of an artifact which can be specifically attributed to human usage of that artifact to apply force to some material or medium.

Analysis of stone tool function or usage is at this time in a young state of evolution. Prior to the English translation of Semenov's *Prehistoric Technology* in 1964, both new world and old world archeologists attempted to posit tool functions through examination of artifact morphology. In a general sense, only artifacts which exhibited evidence of retouch modification were classified as tools, and a variety of quasi-functional categories of such "tools" were defined according to four morphological criteria: (1) the location of retouch modification with respect to proximal, distal or lateral perimeters of the artifact; (2) whether retouch scars were apparent on one or both surfaces adjacent to the retouch perimeter; (3) the outline shape of the retouched perimeter; and (4) the overall outline shape of the entire artifact. This kind of classification resulted in definition of a variety of commonly accepted tool "types" such as "projectile points," "bifacial knives," "unifacial side scrapers," "end scrapers," "burins" and the like. Such taxons served for many years as an analytical base-line from which explanations of intra- and inter-site variability in prehistoric tool usage were derived.

Semenov (1964) revolutionized this traditional morphological taxonomy of tool function. He demonstrated through microscopic observation that the portion of a tool which effectively "worked" upon a material evidenced observable morphological alteration which could be attributed to different usages.

Since the publication of Semenov's monograph, world wide archeological research into stone tool function has proliferated as a variety of experimental and descriptive studies based upon microscopic analyses. Experimental analyses in this regard have been directed toward describing the kinds of micro-alteration of tool edges which occur as a result of the kinds of experimental usage (such as sawing or scraping) against particular kinds of media (such as wood or bone). Descriptive analyses in this regard have focused upon microscopic description of wear patterns observable upon classes of artifacts recovered from archeological contexts suggestive of particular tool use function.

The summed result of such research to date has not yielded any clear cut definition of wear pattern variability which can be attributed isomorphically to particular usage contexts. It has been ascertained that several variables recurrently play a significant role in production of different kinds of wear patterns. These include the material composition of tools, composition of media operated upon with tools, direction of tool usage with respect to working edge, and duration of such usage. Experimental research has further suggested that efficiency of work performance for different tasks is dependent upon material composition of tools, tool edge morphology and edge angle, given particular media operated upon.

For analytical purposes, then, it is not possible at the present time to positively assign use specific contexts to edges of stone tools simply through observation of wear pattern variability. Through examination of wear pattern and edge morphology variables, however, description of similarities and differences among assemblages of tools manufactured from similar materials can be achieved. Measures of diversity in kind and covariation of morphological and wear pattern attributes can be derived from such assemblage descriptions, and within certain limitations can be used to suggest ranges and general realms of tool use activities undertaken at proveniences or site locations in the past.

The results of analysis directed toward description of tool assemblage variability are presented for each provenience in the site descriptions. Apparent differences or similarities in tool usage between proveniences are summarized in the site reports as well.

DESCRIPTION OF ATTRIBUTES

Material Identification

Materials from which artifacts were manufactured were described according to a four-digit code established by A. H. Warren (see Volume 1, Section II, Chapter 1). A sample of these materials were available throughout the analysis to facilitate consistency in identification, and are on file at the Office of Contract Archeology, University of New Mexico.

Debitage and Small Angular Debris

1. Freehand Debitage

Freehand debitage are fragments of lithic material which exhibit dorsal and ventral surfaces, and are detached from a core through the application of force from one direction.

2. **Bipolar Debitage**

Bipolar reduction is undertaken through resting a core on a resistant anvil and striking it from above. Although much debitage produced through this technique is indistinguishable from freehand debitage, some pieces exhibit morphological attributes unique to bipolar manufacture. These include the presence of a negative bulb of percussion on one or both surfaces, or the presence of two positive bulbs of percussion on opposite surfaces or at opposite ends of the same surface. Bipolar debitage often exhibits crushing upon distal and/or proximal ends, but crushing was not employed as a criterion for classification in the analysis.

3. **Small Angular Debris**

Small angular debris is debitage which exhibits no definable ventral surface, but does exhibit conchoidal scars indicative of percussion manufacture. Small angular debris was distinguished from large angular debris through the criterion of weight. Angular debris weighing less than 40 grams was classified as "small," whereas angular debris weighing 40 grams or more was classified as "large."

Debitage and Small Angular Debris: Attributes Monitored

1. **Debitage Dimensions**

a. **Length:** Length was measured in millimeters along the proximal/distal axis.

b. **Width:** Width was recorded in millimeters as the widest distance between both lateral sides along an axis at 90 degrees to the proximal/distal axis.

2. **Small Angular Debris Dimensions**

a. **Length:** Length was measured as the largest dimension in millimeters.

b. **Width:** Width was measured as the largest dimension in millimeters along a plane defined at 90 degrees to the long axis.

3. **Cortex Kind**

a. **Waterworn:** Waterworn cortex was created when a piece of material was subjected to prolonged stream action, and varies in appearance dependent upon material composition. In general, waterworn cherts, chalcedonies and basalts exhibit a smooth, approaching polished outer cortex. Waterworn obsidians are characterized by a rough outer cortex comprised of overlapping conchoidal fracture scars.

b. **Other:** The category of "other" included any nonwaterworn cortex formed as a result of weathering through geologic time.

4. **Cortex Placement**

Three criteria of cortex placement were monitored for debitage: platform only, dorsal surface only, and both platform and dorsal surface. Presence or absence of cortex was monitored for small angular debris, but not placement.

5. **Platform Kind**

For those pieces of debitage exhibiting platforms, an attempt was made to monitor attribute criteria indicative of reduction stage at which the debitage was detached. Debitage exhibiting cortical platforms were accounted for through documentation of cortex placement. Additional platform attributes monitored include:

a. **Single Facet Platforms:** Platforms characterized by a single, noncortical facet or surface.

b. **Retouch Platforms:** Platforms characterized by small retouch scars indicating that the debitage was detached from a previously retouched artifact perimeter. Retouch platforms were additionally examined for presence or absence of wear patterns along the intersection of the platform and dorsal surface of the debitage which might indicate prior utilization of the edge perimeter from which it was detached.

Debitage with retouch platforms exhibiting either no observable wear patterns, or considerable grinding, were analytically treated as by-products of artifact manufacture and were termed "retouch flakes" in subsequent analysis. Debitage with retouch platforms exhibiting observable wear patterns or considerable grinding were tically treated as resharpening by-products of tool usage, and were termed "resharpening flakes" in subsequent analysis.

Edge Attributes: Morphology

An edge is defined as any portion of the perimeter of a piece of debitage which exhibits observable retouch or use modification. Debitage perimeters are all points at which the dorsal and ventral surfaces of the debitage *intersect*. Because some pieces of debitage exhibit more than one portion of their perimeters which have been modified through retouch or usage, edges were defined as exhibiting continuous modification along a discrete portion of the debitage perimeter.

1. **Edge Retouch**

Retouch modification refers to the detachment of small pieces of debitage from a portion of the perimeter of a given piece of debitage, and is observable as a series of small negative scars which originate from the perimeter and extend over a portion of either surface of the artifact. If the scars extend over one-third or more of either surface from the perimeter, the retouch modification is termed *facial* retouch. If the scars extend from the edge perimeter over less than one-third of either surface, the retouch modification is termed *marginal* retouch.

Three categories of marginal retouch were monitored as edge attributes:

a. **Unidirectional Dorsal Retouch:** Marginal retouch extending from an edge perimeter over a portion of the dorsal surface of a piece of debitage.

b. **Unidirectional Ventral Retouch:** Marginal retouch extending from an edge perimeter over a portion of the ventral surface of a piece of debitage.

c. **Bidirectional Retouch:** Marginal retouch extending from an edge perimeter over a portion of both the dorsal and ventral surfaces of a piece of debitage.

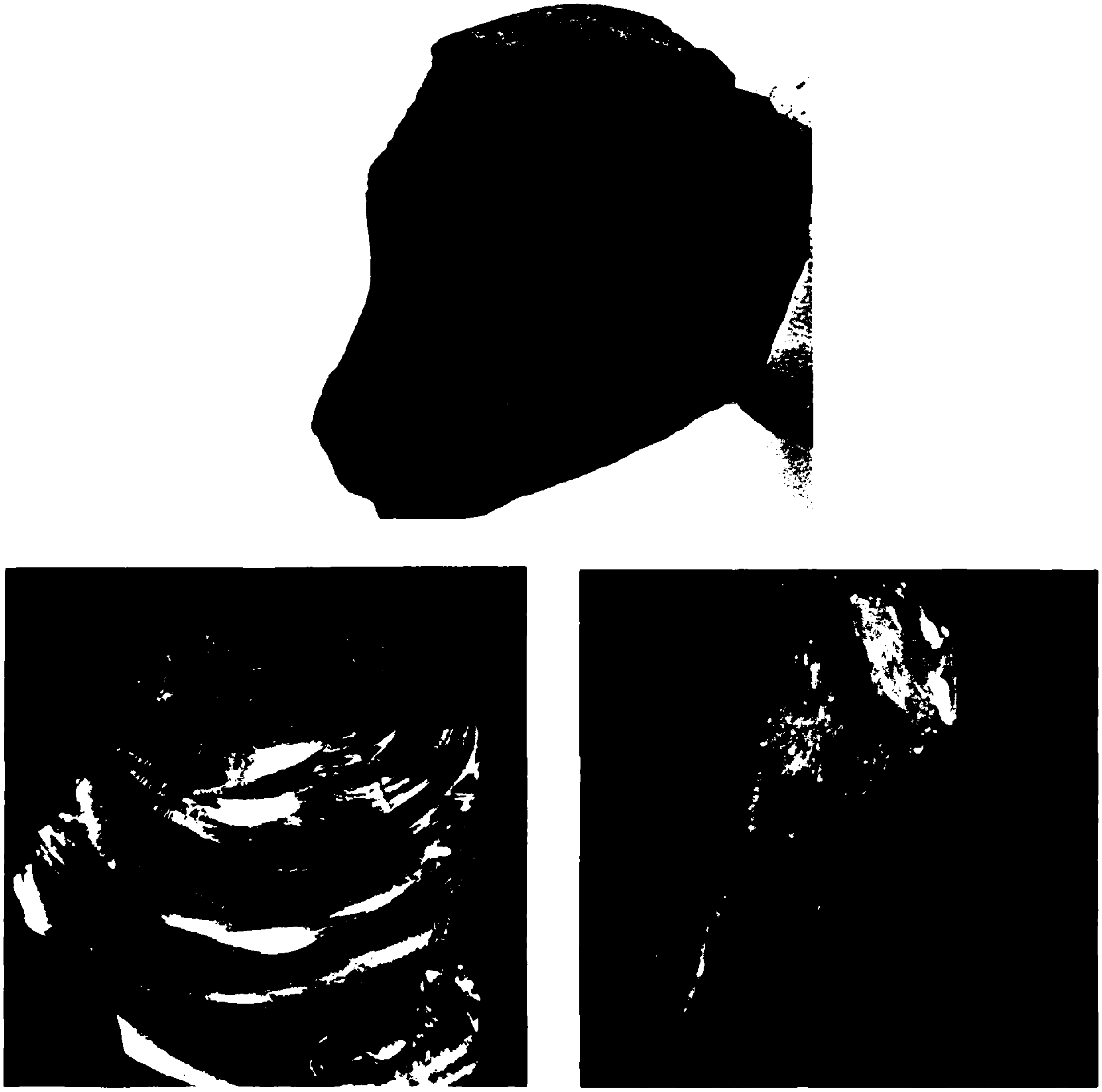


FIG. 4.1 Retouch Platforms

2. **Edge Outline**

Edge outline is defined as the gross outline shape of the edge perimeter with respect to the long axis of the edge. Five categories of edge outline were monitored: concave; straight; convex; concave-convex, and projections.

3. **Edge Sinuousity**

Edge perimeters may be essentially smooth or sinuous with respect to two planes, regardless of the overall outline shape of the edge.

a. **Lateral Sinuousity**: Edges exhibit lateral sinuousity when they appear serrate in plan view.

b. **Transverse Sinuousity**: Edges exhibit transverse sinuousity when the edge perimeter deviates from side to side of a plane defined through the intersections of the ventral and dorsal surfaces of the debitage.

Edge sinuousity is produced through retouching and is thus a morphological attribute controlled by the tool

manufacturer. In general, unidirectionally retouched edges may exhibit lateral sinuousity but not transverse sinuousity, whereas bidirectionally retouched edges may exhibit both lateral and transverse sinuousity. Both unidirectional and bidirectional retouching may of course, be controlled to produce edges essentially smooth in both the lateral and transverse planes.

4. **Edge Angle**

Edge angle is defined by the angle of intersection of the dorsal and ventral surface of the debitage at the edge perimeter. The effects of usage along upon edge angle morphology were not measured. For those edges exhibiting retouch modification, edge angle was measured as the intersection of retouched portions of the dorsal and ventral surfaces. Edge angles were taken with blade-type spark plug gap adjusters and were measured to the nearest degree with protractors. Modal degree measurements were entered for those edges exhibiting variability in edge angle.

Edge Attributes: Wear Patterns

Wear patterns are defined as observable alteration of some portion of an artifact which has occurred through utilization of that artifact as a tool. With respect to tools manufactured from silicious materials, this alteration is observable under magnification as a range of different patterns of microfracture and cross-sectional morphology of edge perimeters which are the result of force having been applied to those artifact edges during use.

As noted previously, the last decade has witnessed a proliferation of experimental and descriptive studies concerned with wear pattern research. Although a professional concern to identify kinds of stone tool utilization through examination of wear patterns can be documented in the literature from prior to the turn of the century (see Tringham *et al* 1974), archeologists of the western world did not really discover that a microscope could be profitably used for such endeavors until the 1964 English translation of *Prehistoric Technology* (Semenov 1964).

While Semenov's research focused upon striations almost to the exclusion of other kinds of wear patterns exhibited by stone tools, subsequent studies have been directed increasingly toward documenting the full range of variability among patterns of fracture, polish, striations and edge morphology which can be reliably expected to occur when stone artifacts are utilized as tools for specific tasks.

Initial "post-Semenov" wear pattern research was undertaken from two directions. Many studies of stone tool assemblages recovered from archeological contexts began to incorporate microscopic examination for evidence of utilization as a search procedure in conjunction with other kinds of analysis, or with respect to particular kinds of artifacts. Approaches such as these are illustrated in Wilmsen (1968), Witthoft (1967), Nance (1971), and Knudson (1973) among others. At the same time, several researchers began to undertaken limited experimental programs through which stone tools were used for different tasks, and the resultant wear patterns documented (Keller 1966; Crabtree and Davis 1968; Ahler 1970).

It became apparent during the late 1960's and early 1970's that both descriptive and experimental pursuits were of equally critical importance to the development of reliable, comparative analyses of prehistoric stone tool usage strategies. It became apparent as well that both rigorous experimentation and rigorous documentation of wear pattern variability necessitated considerable expense in terms of training, equipment, laboratory space and man hours. Because of these practical time and cost considerations, it has been difficult to pursue or publish wear pattern research on an extensive scale.

This situation has resulted in somewhat piecemeal strategies of analysis, publication and personal communication among those individuals engaged in such research. Some of the more comprehensive and productive wear pattern studies have been undertaken as M.A. or Ph.D. research (Ahler 1970; Knudson 1973), or as a compilation of research undertaken by several individuals over a period of years (Tringham *et al* 1974).

The wear pattern analysis documented here is in part based upon previous research conducted by Chapman (1971; 1972; 1973), and in part upon research directed jointly by Schutt and Chapman, as reported in Chapman (n.d.). Because of the present need for published documentation of wear pattern experiments, the results of a limited experimental program initiated at the outset of laboratory analysis will be summarized. It should be noted that this program was undertaken primarily as a training exercise, and secondarily to refine criteria through which wear pattern variability could be described. It is perhaps also of interest that the experimental design, while developed independently, is remarkably similar to that outlined by Tringham *et al* (1974).

1. **Experimental Design**

Pieces of debitage suitable for hand held usage were manufactured from three kinds of material comprising the vast majority of tools recovered from archeological contexts within the study area. These included obsidian (material types 3520, 3525), basalt (material type 3701) and one variety of chert (material type 1051).

Seasoned pine stakes were employed as media operated upon with the artifacts, and both unretouched and retouched edges were used to perform a variety of tasks including variations of scraping, whittling and sawing.

The following criteria were employed to define tasks: angle between the working edge and surface of the medium (45 degrees or 90 degrees); unidirectional versus bidirectional movement of the working edge against the medium; movement of the working edge in a direction parallel versus perpendicular to its long axis; and in cases of edges which were moved perpendicular to their long axes, whether the edge was essentially "leading" (as in whittling or planing), or "trailing" (as in scraping).

A total of six tasks were defined employing permutations of these criteria. For the sake of brevity in following discussion, these tasks will be assigned names and defined here.

a. **Sawing at a 90 degree angle:** Edge is held at a 90 degree angle to the surface of the medium and used longitudinally (in a direction parallel to its long axis) in a bidirectional "forwards-backwards" movement.

b. **Sawing at a 45 degree angle:** Edge is held at a 45 degree angle to the surface of the medium and used in the same way as sawing at a 90 degree angle.

c. **Unidirectional scraping at a 90 degree angle:** Edge

is held at a 90 degree angle to the surface of the medium and used transversely (in a direction perpendicular to its long axis) in a unidirectional movement. The majority of scraping experiments involved unidirectional usage in which the artifact was pulled toward the operator.

d. **Unidirectional scraping at a 45 degree angle:** Edge is held at a 45 degree angle to the surface of the medium with the top of the artifact tilted toward the operator, and used in the same fashion as unidirectional scraping at a 90 degree angle.

e. **Bidirectional scraping at a 90 degree angle:** Edge is held at a 90 degree angle to the surface of the medium and used transversely in a bidirectional movement; i.e., the artifact is both pulled toward and pushed away from the operator.

f. **Whittling:** Edge is held at a 45 degree angle to the surface of the medium and used transversely in a unidirectional movement such that the working edge is essentially "leading" into the surface of the medium. In the majority of whittling experiments, artifacts were held with the top of the implement tilted toward the operator and the working edge pushed away from the operator.

Edges were periodically examined microscopically and described throughout each experiment. The total number of strokes was noted for each edge examined. When an edge became noticeably less efficient in the performance of a particular task, the total number of strokes was again noted, and the edge was again described and measured. Artifacts used in the experiment are on file at the Office of Contract Archeology, University of New Mexico, Albuquerque.

The experiments generally verified previous observations that kinds of wear patterns produced through similar tasks vary according to material differences among artifacts, and that no single set of wear patterns can be attributed isomorphically to a particular task. In this sense, different tasks did not necessarily result in production of of mutually exclusive sets of wear patterns characteristic of those tasks. If, however, a population of edges used for one task (such as sawing) is compared with a population of edges used for a different task (such as unidirectional scraping), significant differences in the frequency of occurrence of different wear patterns produced by those different tasks can be defined. It is thus expected that while task-specific function cannot necessisarily be assigned to a single tool through examination of its working edge, at least general statements concerning ranges of tasks performed can be approached through examining populations of working edges comprising an assemblage.

A total of six discrete scar fracture taxons were defined employing experimental data. One of these taxons, "perpendicular feathered scars" was not employed in the analysis of tools recovered from archeological contexts because of its nearly uniquitous occurrence across the majority of utilized edges.

In addition, five taxons of edge cross-section morphology were defined through experimentation. Descriptions of each scar fracture and edge cross-section are presented here.

a. **Feathered scars:** Feathered scars produced through usage of an edge perimeter are morphologically similar to many scars produced through retouch in that the distal and lateral portions of the scars "feather out" to meet the debitage surface, rather than terminate in abrupt fractures. Such scars are termed "scalar scars" by Tringham *et al.* (1974:188), and are considerably smaller in overall size and depth than those produced through retouch.

It was observed during experimentation that feathered scars with their proximal-distal axes oriented perpendicular to the working edge were produced in some frequency upon all materials through nearly all modes of usage undertaken. In general, more glassy materials such as obsidian exhibited higher frequencies of these scars after usage than did coarser cherts and basalts. Because of their general ubiquity, the presence of perpendicular feathered scars upon utilized edges was not employed as a taxon in the subsequent analysis.

Feathered scars with their proximal-distal axes oriented at an angle off perpendicular to working edges were produced in a more restricted number of usage modes, predominately those involving longitudinal rather than transverse movement of the edge against a medium. Because diagonal feathered scars appear to be produced as a function of a more narrow range of edge usages, the presence of such scars was monitored as one taxon of scar pattern variability.

b. **Step Fractures:** Step fractures are negative scars originating from an edge perimeter which terminate at their distal ends in abrupt "steps" or cleavages which are morhpologically similar to macroscopically observable hinge fractures produced occasionally through debitage manufacture. Step fractures have been well documented in wear pattern research, and have been variously referred to as "step flakes" (Ahler 1970), "step scars" (Tringham *et al.* 1974), or "step fractures" (Crabtree and Davis 1968).

During experimentation both the presence and orientation of step fractures with respect to working edges were noted. In general it was observed that step fractures were occasionally produced on both surfaces adjoining an edge perimeter when the edge was used longitudinally in bidirectional fashion (or "sawing"), and upon the "trailing" rather than "leading" surface adjoining an edge perimeter when the edge was used in transversely in unidirectional fashion (or scraping).

Unidirectional scraping usage modes resulted in production of a preponderance of step fractures oriented perpendicular to the edge margin, regardless of the angle at which the edge was held to the medium. Sawing usage modes, while occasionally resulting in the production of perpendicular step fractures upon either surface adjoining the edge perimeter, more consistently resulted in production of step fractures oriented at an angle to the edge perimeter, and as well in production of diagonal feathered scars.

It should be noted that several sawing and scraping experiments involving use of basalt (3701) and Pedernal chert (1051) did not result in production of step fractures at all, but rather in abrasion of the working edge perimeter. From this it can be suggested that while the orientation of step fracture scars to the working edge, and the placement of those scars on one or both surfaces adjoining the edge perimeter is partially informative about the general usage mode resulting in their production, the lack of step fractures does not indicate that a particular edge was not used for sawing or scraping upon relatively resistant mediums.

c. **Crescentic scars:** Crescentic scars are microscars which have resulted in detachment of a portion of the edge margin and equal portions of both flake surfaces adjoining the edge margin. These scars appear as shallow, concave "scoops" along the edge margin. The distinguishing characteristic of crescentic scars is that, unlike other microscars, they do not occur on either surface adjoining an edge margin, but rather represent portions of the edge margin which have been completely detached through usage.

Crescentic scars were produced experimentally across all three materials and through all usage modes employed. They occurred most frequently, however, through sawing experiments in which the edge was held at a 90 degree angle to the medium. Sawing in which the edge was held at a 45 degree angle to the medium resulted in the production of lesser frequencies of crescentic scars and occasional edges exhibiting no such scars. Crescentic scars were also occasionally produced on edges held at a 45 degree angle and used in a unidirectional scraping fashion, edges held at a 45 degree angle and used in a unidirectional whittling fashion, and on edges held at a 90 degree angle and used in a bidirectional scraping fashion.

Crescentic scars were generally not produced through unidirectional scraping during which edges were held at a 90 degree angle to the medium.

d. **Nibbling:** Nibbling (for lack of a more elegant term) is observed as relatively continuous sets of extremely small feathered scars situated on one or both surfaces of an artifact adjoining the edge margin. "Nibbling" scars are thus morphologically similar to feathered scars, but are significantly smaller in length, width and depth. Nibbling scars were produced most consistently in greatest frequencies through bidirectional sawing usage during which the edges were held at a 90 degree angle to the medium, and through unidirectional scraping usage during which the edges were held at a 45 degree angle to the medium. Whittling, sawing at a 45 degree angle to the medium and unidirectional scraping at a 90 degree angle resulted in no nibbling scars in the vast majority of cases.

It was noted throughout the experimentation that nibbling scars were quite often produced during the first 50 to 100 strokes made with an edge, but were subsequently obliterated through the production of step fractures, crescentic scars or edge abrasion. The kind of material from which a tool was manufactured had no apparent effect upon the production of nibbling scars.

e. **Scar location:** In addition to documenting the presence and kind of microscar variability for each utilized edge, the placement of those scars was noted. Three criteria of placement were employed to define the location of scars with respect to surfaces adjoining an edge perimeter. These included ventral placement, dorsal placement and both ventral and dorsal placement.

3. Edge Rounding Taxons

Edge rounding as defined here is essentially the result of abrasion of an edge margin itself and is quite often observed microscopically as a polish of greater or lesser degree of luster along the edge margin. It was noted during experimentation that less friable materials such as basalt often exhibited abrasion as the only wear pattern produced through usage. With respect to basalt and chert, abrasion of an edge margin quite often occurred in conjunction with striations and, in many cases occurred in addition to one or more microscar taxons. The experimental procedures suggested that documenting the effect abrasion had upon the cross-section morphology of edge margins would provide greatest insight into usage modes resulting in edge abrasion, and for that reason four taxons descriptive of cross-section shape of abraded edges were defined for analysis.

a. **Evenly Rounded Edges:** Evenly rounded edges are characterized in cross-section by even and symmetrical abrasion from the edge margin toward both ventral and dorsal surfaces of the artifact. Evenly rounded edges were experimentally produced most consistently through sawing at both 45 degree and 90 degree angles.

Unidirectional scraping at a 90 degree angle resulted in production of very slight even rounding in only one case, in which the artifact was pushed away from the operator rather than pulled toward the operator. Bidirectional scraping at a 90 degree angle resulted in infrequent production of evenly rounded edges, as did unidirectional scraping at a 45 degree angle. Whittling experiments resulted in no evenly rounded edges.

b. ***Unidirectionally* Rounded Edges:** Unidirectionally rounded edges are characterized by abrasion extending from the edge margin toward only one surface of the artifact adjoining that margin. Unidirectionally rounded edge margins were experimentally produced very sporadically through sawing at a 90 degree angle, unidirectional scraping at a 90 degree angle, and bidirectional scraping at a 90 degree angle. Sawing, scraping and whittling at a 45 degree angle did not result in production of any unidirectionally rounded edges.

c. **Unidirectionally Beveled Edges:** Unidirectionally beveled edges exhibited abrasion from the edge margin toward either the dorsal or ventral surface of the artifact adjoining the edge margin which has resulted in production of a flat facet describing a plane which intersects the opposite surface of the artifact at the edge margin at an angle of less than 90 degrees. Unidirectionally beveled edges are thus distinguished from unidirectionally rounded edges in that the former exhibit a distinct planar or flat surface in cross-section, where as the latter exhibit a distinctly convex surface in cross-section.

Unidirectionally beveled edges were produced experimentally solely through unidirectional scraping at a 45 degree angle in three of seven cases. Obsidian artifacts were employed in two of those cases, and a basalt artifact was employed in the other.

d. **Flat Edges:** Flat edges exhibit abrasion of the edge margin which has resulted in production of a flat facet describing a plane which intersects both surfaces adjoining the edge margin at the same angle, or is essentially perpendicular to either the lateral or proximal/distal axis of the artifact, depending upon the location of the abraded edge. Flat edges were experimentally produced solely through unidirectional scraping at a 90 degree angle in three of six cases.

4. Other Wear Patterns

In addition to microscar and edge cross-section variability, three categories of ancillary patterns were monitored during analysis of utilized edges.

FIG. 4.2 Feathered Scars

FIG. 4.3 Step Fractures

FIG. 4.4 Crescentic Scars

FIG. 4.5 Rounding

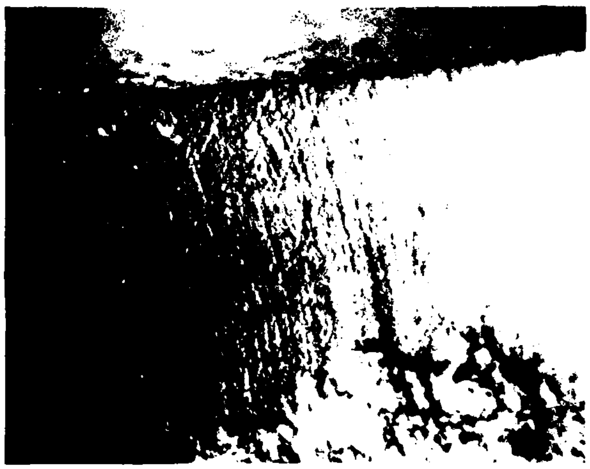


FIG. 4.6 Striations

a. **Rotary Wear:** Rotary wear patterns were documented as any evidence of microscarring or edge abrasion observed upon shafts of projections. Tringham *et al* (1974), Chapman (n.d.) and others have documented to some extent variability in edge damage along the shaft of projections employed for drilling or boring into resistant mediums. All projections encountered were examined for evidence of such rotary usage along their shafts in order to distinguish those projections employed as drills from those employed in essentially incising or graving functions, which can be expected to exhibit considerably greater unidirectional microscarring and abrasion of their tips rather than their shafts.

b. **Polish:** Polish is observed as a sheen or mirror-like surface apparent on the edge margin and/or surfaces directly adjacent to the edge margin of a utilized artifact. Polish is generally produced through abrasion, although Witthoft (1967) has documented polish produced through accumulation of opalitic deposits as a function of repeated cutting of grass species. It was observed through experimentation that polish was generally produced upon edges only after repeated utilization, and that in most usage contexts began to appear at about the time that the edge became noticeably less effecient in performance of the particular task.

c. **Striations:** Striations are minute scratches observable on facets of the edge margin or surfaces adjacent to the edge margin which are produced through contact of the edge with particles of material comprising the same or greater hardness than the artifact itself. Striations are perhaps the best indication of the direction in which an edge was used against a medium. Two criteria of orientation of striations with respect to the edge margin were monitored during analysis: Striations oriented perpendicular to the edge margin, suggesting either unidirectional or bidirectional transverse movement of the edge against a medium; and striations oriented either parallel or at a diagonal to the edge margin, suggesting longitudinal movement of the edge against a medium.

Backing

Backing is defined as any portion of an artifact directly opposite a utilized edge perimeter which is flat or dull enough to facilitate the application of force through the utilized edge without personal injury. Two kinds of backing were monitored during analysis.

"Natural" backing was defined as the existence of a single relatively flat facet or cortical surface opposite the utilized edge.

Retouch backing was defined as modification of an artifact perimeter opposite a utilized edge through retouching to create a relatively flat or dull surface. Retouch opposite a utilized edge was considered to be backing if at least two retouch scars were exhibited and no wear patterns were observable along the intersection of the retouched surface and surfaces of the artifact.

Cores, Large Angular Debris and Choppers: Definitions

1. Cores

Two taxons of cores were defined. "Freehand" cores are pieces of material which exhibit no bulb of percussion and two or more negative scars at least 2cm long which originate from one or more facets or surfaces of the material.

Bipolar cores are defined as pieces of material which meed one or both of the following criteria:

a. The existence or two positive bulbs of percussion on the same or different surfaces of the material;

b. The existence of one positive bulb of percussion at one "end" of the artifact and a negative scar originating from the opposite end on the same or a different surface.

2. Large Angular Debris

Large angular debris are pieces of material which exhibit no bulbs of percussion, no evidence of utilization, weigh 40 grams or more, and exhibit no more than one negative scar 2cm or more in length originating from an existing surface of the artifact (this criteria distinguishes large angular debris fro cores).

3. Choppers

Choppers are pie of large angular debris which exhibit evidence of ut ion along one or more intersections of surfaces or rs. It should be noted that some artifacts intuitively ved as retouched choppers were analytically tr as cores if the retouch scars exceeded 2cm in length.

Cores, Large Angular Debris and Choppers: Attributes Monitored

1. Dimensions (all taxons)

a. *Maximum:* the maximum dimension was measured in millimeters as the longest axis through the artifact.

b. **Minimum:** the minimum dimension was measured in millimeters as the longest axis through the artifact along a plane described at 90 degrees to the maximum dimension axis.

c. **Weight:** weight was measured to the nearest gram.

2. Platforms (cores only)

Platforms are defined as any surface or facet of a core from which negative scars 2cm or more in length originate. The number of platforms exhibited by a core was monitored, and the angle of intersection between each scar facet and the platform surface was measured to the nearest degree. In addition, each platform was categorized according to kind as follows:

a. **Cortical Platforms:** Platforms exhibiting cortical surfaces.

b. **Single Facet Platforms:** Platforms exhibiting no cortex characterized by a single flat or concave surface created through fracture.

c. **Multifacet Platforms:** Platforms exhibiting no cortex characterized by two or more surfaces or facets created through fracture.

3. Wear Patterns (cores and choppers)

All artifacts meeting criteria for inclusion into core, large angular debris or chopper categories were examined

for evidence of wear patterns along any intersection of two surfaces or facets. Cores exhibiting wear patterns were analytically treated as cores in summary counts, and wear pattern variability among them is discussed where appropriate. Artifacts otherwise meeting criteria for inclusion into the large angular debris category, if characterized by utilization, were analytically treated as choppers in summary counts. Two wear pattern categories were monitored for these artifacts, "battering" and "other." Battering is observed microscopically as a concentration of overlapping concentric and conical fractures. Battering usage of an edge perimeter results in extreme deterioration of the edge margin. "Other" wear patterns monitored for these artifacts taxons include any non-battering wear patterns which could be observed.

Hammerstones

Hammerstones are defined as artifacts which exhibit battering alone or battering in conjunction with negative scars originating from battering loci as the *only* modification of their natural surfaces.

1. **Dimensions**

Maximum and minimum dimensions of hammerstones were measured in millimeters according to the same criteria as those defined for cores, large angular debris and choppers. Weight of hammerstones was measured to the nearest gram.

2. **Loci of Battering Wear**

Five criteria of surface morphology exhibiting battering wear were defined, given a range of possibilities determined through previous analysis of different hammerstone assemblages. These included:

a. battering exhibited substantially upon all surfaces of the artifact.

b. battering exhibited upon a "ridge," or essentially acute intersection of two plane surfaces. An example of this kind of locus would be the lateral side of a cobble which was distinctly lenticular in cross-section.

c. battering exhibited upon a nonacute, but distinctly convex surface.

d. battering exhibited upon a flat surface.

e. battering exhibited upon a highly convex, pointed surface. An example of this kind of locus would be the narrow end of a cobble which was lenticular in cross-section.

Unifaces and Bifaces

Unifaces are defined as artifacts which exhibit retouch scars extending over one-third or more of only one of their surfaces. Bifaces are defined as artifacts which exhibit retouch scars extending over one-third or more of both their opposing surfaces.

Unifaces and bifaces present certain difficulties with respect to computerization, in that many attributes of these artifacts which have been deemed of critical importance in ascertaining cultural affiliation and period of manufacture are not easily subject to explicit definition or measurement. Attribute variability defined here for documentation of unifaces and bifaces is not intended to be all-inclusive, or necessarily relevant to existing typological classifications, but is rather oriented toward description of gross morphology, utilization and breakage of those artifacts, given the assumption that they were employed as tools in the past.

1. **Condition (unifaces and bifaces)**

Five criteria of a condition were monitored. These included whether the uniface or biface was hole, a midsection fragment, a distal fragment, a proximal fragment or an undetermined fragment.

For bifacial artifacts, the proximal end is defined as the end exhibiting modification for hafting (or "base"), or the widest end of an artifact exhibiting no hafting modification. Distal ends of bifacial artifacts are defined as either the end opposite the base, or the narrowest end of an artifact exhibiting no basal modification. Fragments retouched to a pointed end were classified as distal fragments.

For unifacial artifacts, the distal end is defined as that portion of the perimeter exhibiting utilization.

2. **Breakage (bifaces only)**

In addition to condition, the kind of breakage exhibited by bifacially retouched artifacts was monitored.

a. **Burin break:** Burin breaks are caused by force directed to the distal end of the artifact in a direction parallel to the long axis of the artifact, which results in a fracture originating at the distal end which runs parallel to the long axis and terminates in a hinge at some point below the distal end.

b. **Lateral break:** Lateral breaks result when force is applied laterally to the artifact rather than longitudinally through its long axis. Lateral breaks thus result in fractures orineted more or less parallel to the long axis of the artifact, in which portions of the lateral side of the artifact are removed.

c. **Transverse breakage:** Transverse breaks result in a fracture oriented either perpendicular or at a slight angle off perpendicular to the long axis of the artifact. The angle of the fracture to the distal/proximal axis of the artifact was measured in degrees.

3. **Outline shape (unifaces and bifaces)**

Six very gross criteria of outline shape were monitored. These included round, ovate, ovoid, triangular, rectangular and other. Ovate and ovoid refer to essentially oval shapes, with the distinction that ovate outlines exhibit pointed distal and proximal ends, where ovoid outlines exhibit rounded distal and proximal ends.

4. **Notching (bifaces only)**

Three criteria descriptive of notching at the proximal end of bifaces were monitored. These included basal notching, side notching and corner notching.

5. **Stems (bifaces only)**

Stems were monitored according to shape (parallel sided, or flared outward, toward the proximal end of the artifact) and whether they exhibited evidence of grinding along their lateral sides.

FIG. 4.7 Bifacially Retouched Artifacts

FIG. 4.8 Gunflints

6. **Bases (bifaces only)**

Bases were monitored according to outline shape (concave, straight, convex or bifurcated) and according to whether or not they exhibited evidence of grinding.

7. **Dimensions (unifaces and bifaces)**

Length, width and thickness was measured to the nearest millimeter. Length was defined as the longest measurement along the proximal/distal axis of the artifact; width was defined as the longest measurement between the lateral sides of the artifact taken at 90 degrees to the proximal/distal axis; and thickness was defined as the longest measurement between both surfaces of the artifact.

8. **Wear Patterns (unifaces and bifaces)**

Information concerning outline shape, retouch, edge angle and wear patterns exhibited by utilized edges of unifaces and bifaces was the same as that recorded for debitage.

Manos

Manos are defined as artifacts which exhibit at least one surface characterized by one or more smooth facets produced through grinding. Manos are hand-held implements presumably used primarily to crush and grind vegetal foodstuffs such as seeds against metates.

Two general taxons of manos were defined: One-hand manos, and two-hand manos. One-hand manos are circular to oval in outline shape and range from lenticular to rectangular in cross-section. Two-hand manos range from rectangular to subrectangular in outline shape and exhibit a variety of cross-sectional morphologies including rectangular, triangular and trapezoidal. One-hand manos were generally used in reciprocal grinding fashion against metates characterized by nearly flat or slightly basin shaped grinding surfaces. Grinding surfaces produced on one-hand manos through this usage are generally small in surface area and form a distinct facet upon the surface of the mano. One hand manos may exhibit two such facets upon the same surface or facets on opposed surfaces.

Two-hand manos are used in reciprocal grinding fashion as well, with the long axis of the artifact being held at right angles to the direction of grinding. Two hand manos were used in conjunction with metates characterized by relatively broad grinding surfaces which were flat or slightly concave in both longitudinal and latitudinal cross-section. Grinding surfaces produced on two-hand manos through this usage are generally much larger in surface area than those exhibited by one-hand manos and extend over the complete length of the mano itself. Depending upon the nature of usage, two-hand manos may exhibit more than one such facet upon a given surface, and are sometimes characterized by as many as four distinct grinding surfaces.

The following attributes were recorded for both one-hand and two-hand manos:

1. **Condition**

Manos were noted as being either whole or fragmentary.

2. **Cross-section, shape and number of grinding surfaces**

Four attributes of cross-section shape were monitored, including rectangular, trapezoidal, right triangular, and isosceles triangular. Grinding surface attributes included: one grinding surface; two opposed grinding surfaces; two grinding surfaces on the same side of the mano; or three grinding surfaces, two of which appear on one side of the mano and one of which appears on the opposite side.

It should be noted that these attributes, while accounting for cross-section shape and number of grinding surfaces exhibited by manos recovered from the Cochiti Reservoir area, are not necessarily descriptive of the range in variability among similar artifacts from other areas of the Southwest.

3. **Manufacture**

Manufacture refers to alteration of the overall morphology of an artifact through some action other than utilization. With respect to manos and metates, evidence of manufacture was monitored solely for unutilized portions of their surfaces or perimeters. For attributes descriptive of manufacturing technique were noted including: no evidence of manufacture, pecking, grinding and a combination of both pecking and grinding upon the same surface or perimeter.

4. **Utilization**

Attributes indicative of the kind and direction of utilzation were monitored for each faceted grinding surface exhibited by the artifact.

a. *Latitudinal striations*: linear striations oriented perpendicular to the long axis of the artifact.

b. **Longitudinal striations:** linear striations oriented parallel to the long axis of the artifact.

c. **Rotary striations:** curvilinear striations oriented at angles to the long axis of the artifact.

d. **Pecking:** evidence of pecking, if exhibited upon a faceted grinding surface, was noted as an aspect of utilization.

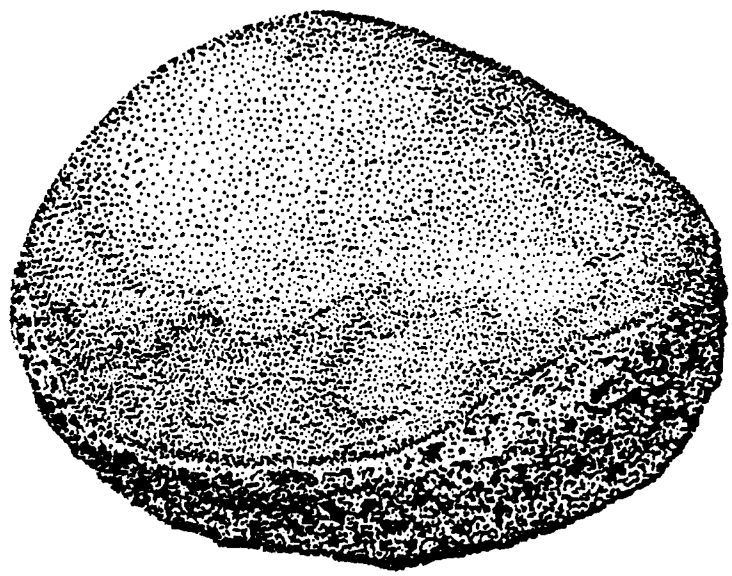
5. **Dimensions**

Maximum length, width and thickness of manos was measured to the nearest millimeter.

Metates

Three general categories of metates were defined employing criteria of grinding surface morphology. These included slab metates, which exhibit a flat grinding surface; basin metates, which exhibit a narrow and distinctly concave grinding surface both latitudinally and longitudinally; and trough metates, which exhibit a broad grinding surface slightly concave both latitudinally and longitudinally, and is set deeply into the surface of the metate. The grinding surfaces of trough metates are bordered on both sides by manufactures "rims." Some trough metates exhibit a similar rim across one end, whereas others exhibit two open ends.

Attributes descriptive of condition, manufacture, utilization and dimensions monitored for metates are essentially the same as those described for manos. In addition, two curvature indexes were noted to describe the degree of curvature exhibited by grinding surfaces present on metates. The longitudinal curvature index was monitored as the depth of the grinding surface divided by the maximum length of the grinding surface, and the latitudinal curvature index was monitored as the depth divided by the width of the grinding surface. These two indexes provide a ratio ranging between zero (flat) to 1.0 or more (highly concave) which permit comparison among metates.



Chapter 5
Prehistoric and Historic Ceramic Analysis

A. H. WARREN

INTRODUCTION

The pottery from 24 excavated sites in Cochiti Reservoir indicate almost continuous occupation of the area from about A.D. 1175 to present day. Scattered sherds of Santa Fe Black-on-White (B/W) suggest occasional use of the canyon prior to A.D. 1300. No earlier sherds were found within the canyon itself, but some mineral painted pottery, Kwahe'e Black-on-White and possibly Mancos Black-on-White, dating between A.D. 950 and 1225, have been reported for sites on the Pajarito Plateau, west of Cochiti Reservoir (Warren 1970). Galisteo Black-on-White (B/W) sherds, dating to the late 13th and early 14th centuries were sparse.

The major occupations in White Rock Canyon were between A.D. 1350 and 1600, when the large Rio Grande glaze sites on the Pajarito Plateau, on Mesa Negra and in the upper Santo Domingo Basin were occupied; and between 1700 and 1900, when the canyon was occupied by Spanish Colonists and their descendents.

After the arrival of the Spanish colonists around A.D. 1600, the large villages of Tyuonyi and Kuapa on the Pajarito Plateau were abandoned, and commerce within the canyon virtually ceased. Not until after A.D. 1700, following the reconquest of New Mexico by the Spanish, is there evidence that settlers found their way again into the narrow canyon.

The arrival of Spanish colonists brought about radical changes in the ceramics of the area. New methods of pottery manufacture and pottery form were brought into the area by these settlers, possibly from Mesoamerica. These innovations include mold-made pottery; ring-based cups; comales, or flat baking dishes of pottery; polished black and redware; fiber temper and other new temper types; flaring walled bowls; mica-slipped pottery, and rolled rims.

PREVIOUS STUDIES

The pottery from sites in the Cochiti area and the high mesas of the Pajarito Plateau to the north have received scant attention from archeologists in the past. Mera (1935) named an early carbon-painted ware, Santa Fe Black-on-White, that had first been described by Amsden (1931), who called it "Blue-gray type." Mera (1935:11) believed that Santa Fe B/W was a fusion of Gallina and Kwahe'e B/W, spreading southward along the southern end of the Jemez Mountains and then northward along the Rio Grande. Since then many archeologists have speculated at length about the ancestry and origins of the Santa Fe B/W pottery and its potters (Ford *et al.* 1972), but have added very little archeological data. In fact, many of the larger and perhaps more important sites of the Developmental (A.D. 600-1200) and Coalition (A.D. 1200-1325) phases in the Rio Grande are yet to be surveyed, recorded or studied (Wendorf 1954). Perhaps even less is known of the small scattered sites of these periods. Worman concluded:

> Further analysis of materials from completed excavations in the Los Alamos area should bring more information to light . . . when asked, "Where did the Pajaritans come from?" we must have better answers than, "Maybe they were here all the time," or "We have to go along with a Mesa Verde origin." Neither answer is acceptable without question, in the light of additional knowledge (Worman 1967: 38).

Rio Grande Glazes

When the members of the Coronado expedition, in A.D. 1540, visited the Pueblos in the Rio Grande Valley, they saw, ". . . earthenware glazed with antimony and jars of extraordinary labor and workmanship, which were worth seeing . . . There were also many pots filled with shining metal, selected, with which they glazed" (Winship 1896). The metal that they saw was galena, a lead ore, used by the Rio Grande potters to produce a lead glaze to decorate their pottery.

N. C. Nelson (1916) was the first archeologist to classify the Rio Grande glazes, using stratified excavations to provide time sequences. In 1933, H. P. Mera published a revised classification for Rio Grande glazes, based upon extensive survey data. His type descriptions and glaze groups are still used today with minor revisions for classifying the glazes that were produced for four centuries. A similar classification system was established for the glazes at Pecos Pueblo by Kidder (1936).

Until the early 14th century only Black-on-White and utility pottery had been made in the Rio Grande, but shortly after A.D. 1300, colorful pottery decorated with glaze paints became popular with potters from the lower Rio Grande to Taos and Picuris Pueblos in the northern valley. A number of writers (Mera 1935, Shepard 1942, Wendorf and Reed 1955) have suggested that the technique of glaze paint was learned from the potters in the Zuni and Little Colorado areas, where glaze paint appeared as early as A.D. 900. More recently, Snow and Warren (1974) have pointed to a possible Mesoamerican influence in the use of two piece horizontal molds used in the production of some of the large glaze decorated ollas of the Rio Grande potters.

With the return of the Spanish to New Mexico in the late 17th century, the production of glaze decorated wares declined and disappeared soon after the turn of the century.

Historic Pottery

The pottery from historic sites in the Cochiti and Canada areas has been only partially studied and classified in recent years. The major work with early historic pottery was done by H. P. Mera (1939) who studied sherds and complete vessels from 17th and 18th century

sites that had been dated with tree rings. Mera presented style trends and dates for each historic pottery type which he described. The 18th century types included Tewa Polychrome, Ogapoge Polychrome and Pojoaque Polychrome, which were carbon-painted vessels made mainly in the Tewa villages; Posuge Red and Kapo Black, also Tewa types; and Puname Polychrome, a mineral painted ware produced by Zia potters. Tewa Polychrome was made mostly during the late 17th century but did overlap into the early 18th century.

At Pecos, Kidder (1936:287) described Plain Red. Manzano Red-on-Buff, Coarse ware, and Burnished Black were named by Hurt and Dick (1946). Toulouse (1949:19) described "Brick Ware" from Abo. Other historic types, Casitas Red-on-Brown, Carnue Plain, and El Rito Micaceous Slip were named by Dick (1968:77-94). Harlow (1973) added carbon-painted types including Powhoge Polychrome to the list of historic Tewa Wares, and Kiua Polychrome dated from A.D. 1750 to 1900, from the Cochiti area.

Previous Studies of Pottery in the Cochiti Reservoir Area

Analytical studies of the ceramics of the Cochiti area and the southern Pajarito Plateau began in 1965, following excavation by the Museum of New Mexico of nine archeological sites within the proposed Cochiti Dam site. Ceramics of a period from the mid 13th through 18th centuries were present. Several reports based upon the results of the ceramic studies were prepared (Warren 1967a, 1967b, 1968, 1969, 1970, 1973). One report included a discussion of research methods used and developed during the studies and is published as Appendix I of this volume.

Petrographic analysis of temper materials of ceramics, a research method developed by Shepard (1936, 1942), was used to determine centers of manufacture, the extent and patterns of trade through time, and the sources of ceramic resource materials. The information obtained resulted in chronological refinements of existing pottery classifications and provided insights into the origin and development of ceramic traditions in the upper Middle Rio Grande. Concomitant search for geologic resources lead to the discovery of extensive prehistoric mines in the Cerrillos District which produced the lead minerals used to make glaze paint to decorate the Rio Grande glaze vessels produced between A.D. 1300 and 1700 (Warren 1975).

Several major ceramic industries in the Middle Rio Grande were identified (see Table I.3 in Appendix I), including those in the Cochiti area and other the Pajarito Plateau. It was found that basalt scoria was used for temper primarily during the early glaze period and that rhyolite tuff was used mainly during the later glaze periods.

New ceramic traditions were noted at Pueblo del Encierro (LA 70), including mold-made pottery, fiber temper, comales or cooking griddles of baked clay, flaring walled bowls, ring bases and mica slipped utility ware. All of these traditions existed in prehistoric time in Mesoamerica, indicating that the potters producing vessels in the Cochiti area may have been Mexican Indians, who settled there with Spanish Colonists after A.D. 1700.

METHODS OF STUDY

Laboratory analysis of the ceramic assemblages from 24 of the excavated sites in Cochiti Reservoir was begun during the fall of 1975 and completed during the early months of 1976. Only two of the architectural sites, LA 12161 and LA 9138, produced substantial amounts of potsherds. Both were 18th century Spanish Colonial sites.

The ceramics from the excavated sites were examined with several goals in mind. These centered upon gathering information at both the site-specific and regional levels. In particular, attributes which might provide insight into the functional make-up of the ceramic assemblage, the temporal placement, and cultural affiliation of each site were recorded. Paint type, vessel form, temper, surface color and finish, rim form, wall thickness, and method of construction were the major attributes noted. Design elements, where present, were also considered.

Each of the sherds was examined with a stereomicroscope for temper class, presence and nature of slips, as well as other attributes difficult to observe megascopically. Time did not permit detailed analysis with a petrographic microscope, although previous work by the author with the ceramics of the Cochiti area allowed applications of the results of earlier studies (Warren 1967a, 1967b, 1967c, 1974).

Where appropriate pottery classifications existed, sherds were sorted according to those types. Brief definitions of pottery types as used in the analysis are presented in Table 5.1. In general, definitions and chronologies established by H.P. Mera (1933, 1935, 1940) for the Middle and Upper Rio Grande, with minor modifications, were used in the analysis.

Many of the potsherds examined did not fall into any of the existing pottery classifications. These were described but were not named due to the small amount of sherds available for study. Literature was searched in an effort to locate descriptions of pottery similar to the unnamed vessel types of the Cochiti Reservoir sites, and requests for unpublished material were made. Very little pertinent data, however, has been received thus far. Earlier unpublished reports of the pottery of the Cochiti area by the author were referred to where pertinent.

Temper classes within vessel forms of each ceramic type enabled estimation of the minimum number of vessels represented at each site, a more informative measure of the ceramic assemblage than raw sherd counts. Using this number, differences in the frequency of bowls, jars and other vessel forms, ratios of painted wares to utility wares, and the total number of vessels present provided a base from which to generate some ideas about the functional make-up of the ceramic assemblage at each site.

Identification of temper classes with a stereomicroscope gave added information concerning cultural affiliations of the pottery of a site and the presence and source of tradewares. Such examination also allowed identification of local or intrusive pottery of unknown classifications, as well as chronological placement, often within a 50 year period, of utility or plainwares that would otherwise be unidentifiable in time, origin, or cultural association. Although the Rio Grande glazes were initially classified by rim form, current knowledge of distribution of temper types through time and space enables significant information to be obtained from body sherds alone.

TABLE 5.1

DISTINGUISHING FEATURES OF CERAMIC TYPES IN COCHITI RESERVOIR

	Carbon Painted Wares	
Santa Fe B/W	A.D. 1175-1300	Fine textured, compact clay body; usually hard, brittle, gray. Fine grained temper, mostly glass shards and silt; may be slipped.
Galisteo B/W	?1250-1350	Polished, often cracked surfaces, both sides, tapered to squared rims; designs Sosi, Dogozshi styles; pendent dots; checkerboards; sherds, local Rio Grande rock temper.
Wiyo B/W	1300-1400	Clay tan, gray, olive, soft, biscuity; polished, slipped inside (Bowls only); designs solid black, "bold." Vitric tuff temper usually.
Abiquiu B/G (Biscuit A)	1350-1450	Polished interior; unpolished, unslipped exterior; pumice shard temper; fine to broad line, pendent, dots, triangles, interior only, rims may be ticked. May be slipped. Gray clay.
Bandelier B/G (Biscuit B)	1425-1550	Polished both sides of bowl, may be slipped; pumice temper; designs as above, but on both sides of bowls. Gray clay.
	Rio Grande Glazes (modified after Mera 1933 and others)	
Agua Fria G/R	1315-1425	Surfaces polished; red inside and out; designs in glaze paint, simple geometric, encircling bands; direct parallel rim.
San Clemente G-P	1315-1425	Red surface on one side of bowls; white or red on outer; direct rim; glaze paint; may have red matte in designs; surfaces polished.
Cieneguilla G/Y, G-P	1325-1425	Yellow, white, or pink surfaces; direct parallel rim; glaze paint + red matte.
Largo G/Y, G-P	1400-1450	Yellow, white, pink surfaces; glaze paint; thickened, expanded lip or rim + red matte.
Espinoso G-P	1425-1490	Yellow, white, pink, red surfaces; may have two surface colors; glaze and red matte paint; sort everted rims.
San Lazaro G-P	1490-1515	Surfaces as in Group C; everted rims, usually longer than Espinoso G-P; glaze and red matte paint designs.
Puaray G-P (early)	1515-1600	Orange, red, white polished surfaces; may be mixed; rims long and thickened, may be beveled to outside, overall good workmanship; glaze and red matte paint designs.
Puaray G-P (late)	1600-1650	As above, but with runny glazes, streaky slips; may have exterior carina.

TABLE 5.1 (con't)

Kotyiti G/Y, G/R, G-P	1650-1700+	Douchromes more common than polychromes; long, parallel sided rims with exterior carina; ollas with sharply everted rims; shouldered bowls; soup plate forms, pitchers; glaze paint runny; slips streaky.
	Mineral Painted Wares	
Kwahe'e B/W	950-1225	Polished interior + slip; grayish brown clay, indurated; sherd, temper, Sosi, Dogozshi, other design styles.
	Historic Carbon Paint Pottery	
Tewa Polychrome	1675-1720	Fine line designs on polished white slips; red underbody; carinated bowls; vitric tuff temper; also crystal pumice.
Posuge Red	?1675-?	No designs; well polished; vitric tuff temper; also sandstone.
"Tewa" B/R	1680-?	Black carbon paint on red or pink surfaces; forms like associated historic vessels; temper varied.
Kapo Black	?1650-?	Polished gray or black surfaces; vitric tuff; sandstone temper (red slipped, then smudged).
Potsui'i Incised	?1450-1550	Geometric fine line incised designs, on smoothed tan surfaces; may have mica slip; vitric tuff temper.
Ogapoge Polychrome	1720-1800+	Carinated bowls, ollas + red matte designs; vitric tuff, crystal pumice temper.
Powhoge Polychrome	1760-1900?	No carinas, red rims early, black rims late vitric tuff, crystal pumice temper.
	Historic Mineral Painted Pottery	
Puname Polychrome	1680-1780+	Carinated bowls: jars; red, black paint; basalt, crystal pumice temper. Post-1780, rounded forms.
Casitas R/B	1740-1900?	Broad red line designs on polished buff surfaces; temper crystal pumice, sandstone, etc., coarse grained.
Red on Tan, Misc.	?1750-?	Red line designs on buff surfaces, chevrons, slashes, narrower lines than above.

SUMMARY

The nature of the archeological sites within White Rock Canyon limits ceramic analysis in several ways. With possibly one exception, the ceramics from 22 of the sites were brought into the canyon from outside sources. Many large villages where pottery may have been produced exist on the periphery of the canyon, on Mesa Negra, in Canada de Cochiti, on the Pajarito Plateau, and in the Cochiti area. Specific production centers have not yet been isolated, although it seems likely that several existed. Interpretation of the ceramics at a small site within the canyon was limited to function, time period and quantity. Association with specific cultural centers must be postponed until such time as temper classes are related to individual pueblos. Sherd numbers at most of the sites are small, and it is often difficult to determine whether the assemblage is indigenous or if some potsherds were introduced by residents who found them elsewhere in the area. Worked sherds, in particular spindle whorls at historic sites, suggest that early inhabitants were using potsherds of a previous occupation.

Analysis of historic pottery in Cochiti Reservoir is hampered by the lack of information about the areal ceramics. It appears that many different ceramic traditions were introduced into the region shortly after A.D. 1700. Pottery at one historic site may differ radically from that from a contemporary site. Hopefully, future studies will provide data for a broad framework of ceramic typologies in the area.

Chapter 6
Bone and Antler Analysis

JEANNE A. SCHUTT

INTRODUCTION

Analysis of faunal remains recovered through excavation of site locations within Cochiti Reservoir was directed toward two objectives. One objective was to ascertain how different bone elements of faunal species were utilized as tools by prehistoric and historic inhabitants of specific site locations within the study area. The second objective was to document strategies of faunal food resource procurement and consumption engaged in by inhabitants of different site locations within the study area.

These objectives dictated that two different sets of analytical procedures be undertaken with respect to the faunal assemblages recovered from each excavated site. The rationale and methodology underlying both sets of analytical procedures are presented in this chapter.

All faunal materials were initially submitted to Dr. A. H. Harris, Museum of Arid Land Biology, University of Texas at El Paso for identification according to species, element, portion, site, sex, age, condition, pathologies and evidence of cut marks and utilization. The following analyses are based in part upon that identification.

BONE TOOL ANALYSIS

The analysis of bones utilized as tools was directed toward three objectives. The first of these included an attempt to isolate either specific usages, or a range of usages for which different classes of bone artifacts were employed as tools. The second of these was that of ascertaining the degree to which particular elements were selected for usage in the performance of particular tasks. The third objective was that of examining the distribution of bone tools throughout site locations for information concerning differential activity performance within given sites. The following discussion will outline procedures employed to approach the first two objectives. The spatial distribution of bone tools within particular site locations is discussed in appropriate site reports.

A taxonomy of bone elements exhibiting evidence of utilization was developed employing criteria of wear patterns, overall morphology of utilized portions of each tool, and kind of manufacturing modification exhibited by each. This taxonomy initially resulted in identification of 48 bone tools: 42 of which exhibited evidence of utilization in the absence of modification through manufacture; three of which exhibited utilization and a minimal degree of retouch modification, and three of which exhibited utilization and a considerable degree of modification. The latter three artifacts will not be discussed in this chapter. Descriptions of them may be found in the site reports. These include a needle recovered from Room 3 of LA 9138, a tool of unknown function recovered from the midden of LA 12161, and a pendant recovered from Room 1 of LA 12449.

Four morphological criteria descriptive of the utilized portions of the remaining tools were defined. These included: 1) projections or essentially pointed edges (Fig. 6.1); 2) highly concave edges which were created through longitudinal splitting of long bone fragments with utilization of the resultant transverse fractures (Fig. 6.1); 3) straight to slightly convex edges representing utilization of lateral rather than transverse fractures of long bone fragments (Fig. 6.2); 4) surfaces of bone fragments exhibiting evidence of utilization solely upon a relatively flat surface of the artifact and not upon an edge created through fracture (Fig. 6.3).

Three criteria of wear patterns were identified. These included: 1) polish, a sheen or mirror-like surface resulting from use on another object; 2) striations, or minute scratches on a surface or edge which are recognizable at ca. 10 to 30 power; 3) rounding, the morphological alteration of a broken surface (green break) through smoothing as a function of unidirectional or bidirectional use against another object.

The sample analyzed appeared to indicate that rounding was produced at a later stage in tool use. While polish can occur on surfaces not morphologically altered, rounding by definition is the morphological alteration of an edge through use.

Through the interpretation of a combination of these wear patterns an identification of tool function was attempted. Five classes of bone tools were defined employing the above criteria; these are described here.

Class 1: Projections

Two types of utilized bone projections were observed:

1a. **Projections characterized by blunt tip exhibiting wear in the form of rounding and polish on the tip alone** (see Fig. 6.1). Frison (1970:26) suggests that this type of tool may have been used in flint knapping but also suggests the possibility of their use for some other purpose, in that flint knapping alone will not produce a high polish. Rounding seems to be more indicative of usage upon pliable materials.

Total Number of Class 1a Specimens. 8

Measurements	Length	Width	Thickness
minimum	21.0mm	7.0mm	7.0mm
maximum	112.0mm	13.0mm	11.0mm
mean	64.0mm	12.0mm	6.5mm

1b. **Projections characterized by rounding on the tip and polish and striations extending down the shaft of**

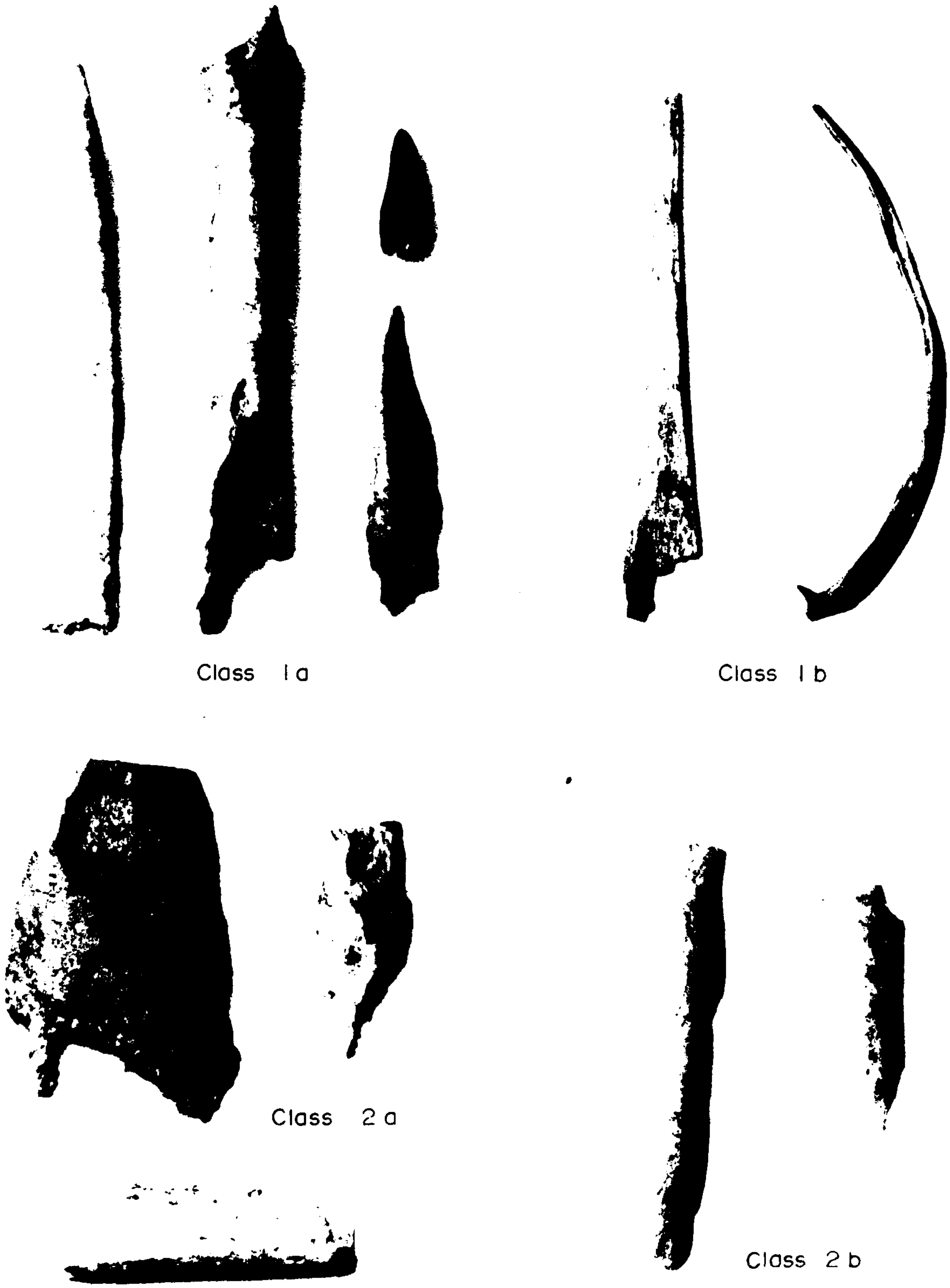


FIG. 6.1 Bone Tools: Classes 1a, 1b, 2a and 2b

the implement. This suggests that the bone was pushed through a soft material. The wear patterns are similar to those noted by Falk (1969:40) and may imply use as a needle (see Fig. 6.1).

Total Number of Class 1b Specimens. 2

Measurements	Length	Width	Thickness
minimum	87.0mm	5.0mm	4.0mm
maximum	87.0mm	10.0mm	2.0mm

Class 2: Highly Concave Edges

These tools were also divided into two subclasses to distinguish between sharpened and natural edges. It appears that long bones were selected for their highly concave cross sections. Long bones were split longitudinally, producing a "U-shaped" edge. Both subclasses exhibit rounding and polish and the striations are parallel to the bone's longitudinal axis. Striations and polish on the bottom of the implement suggest a pushing and pulling between two surfaces. Frison (1970:27) attributes this kind of wear to the skinning process. Tools of this type were also recovered at the Sherman Site where Sperry (1968:66) believes they were used as "fleshers."

2a. **Specimens in this category exhibit concave edges which have been retouched unidirectionally or bidirectionally to produce a sharper edge** (Fig. 6.1). Retouching was evidenced by a series of negative scars similar to those found on silicious stone tools.

Total Number of Class 2a Specimens. 3

Measurements	Length	Width	Thickness
minimum	39.0mm	16.0mm	8.0mm
maximum	56.0mm	39.0mm	16.0mm
mean	51.3mm	24.0mm	13.0mm

2b. **Specimens in this category are characterized by an unaltered edge** (Fig. 6.1).

Total Number of Class 2b Specimens. 3

Measurements	Length	Width	Thickness
minimum	37.0mm	20.0mm	13.0mm
maximum	68.0mm	20.0mm	11.0mm
mean	52.3mm	19.3mm	11.3mm

Class 3: Straight to Slightly Convex Edges

This class of utilization includes the largest number of tools and also the greatest diversity in tool shape. Edge shapes range from straight to slightly convex. Utilization is evidenced by rounding, polish and in many cases striations which are perpendicular to the edge margin (Fig. 6.2). In some instances rounding appears to be unidirectional, suggesting that the bone was either pushed or pulled in one direction. In other cases the rounding seems to be evenly distributed over the edge, implying both a pushing and pulling motion. In either case, it appears that these edges were selected for use as scrapers on a soft material. Unlike specimens with highly concave edges (Classes 2a and 2b), the wear does not extend down the longitudinal axis of the bone. For this reason, it is my belief that the wear on these straight to slightly convex edges was produced from hide scraping i.e.. hide preparation, rather than in the skinning process as in Classes 2a and 2b. Frison (1968:280) records tools with similar wear patterns at Daughtery Cave. He suggests that they may have been used to scrape fat from hides.

Total Number of Class 3 Specimens 17

Measurements	Length	Width	Thickness
minimum	14.0mm	12.0mm	5.0mm
maximum	92.0mm	14.0mm	7.0mm
mean	55.2mm	16.6mm	6.7mm

Class 4: Bone Fragments with Highly Polished Exterior Surface

Several bone fragments were recovered which exhibited polish extending over the outer surface of the fragment (see Fig. 6.3). These fragments are bordered by green breaks which suggest that they are not fragments of a larger tool. The polishing appears only on one side, ruling out the possibility that the polishing was caused by digestion. The cause of this polishing is undetermined at this time.

Total Number of Class 4 Specimens 10

Measurements	Length	Width	Thickness
minimum	13.0mm	12.0mm	2.0mm
maximum	49.0mm	17.0mm	7.0mm
mean	33.7mm	12.1mm	1.6mm

Class 5: Unidentified Grooved and Snapped Antler

One fragment of antler which appeared to have been transversely grooved and snapped was recovered. The method of grooving could not be determined. Due to its poor condition its function could not be determined (see Fig. 6.3).

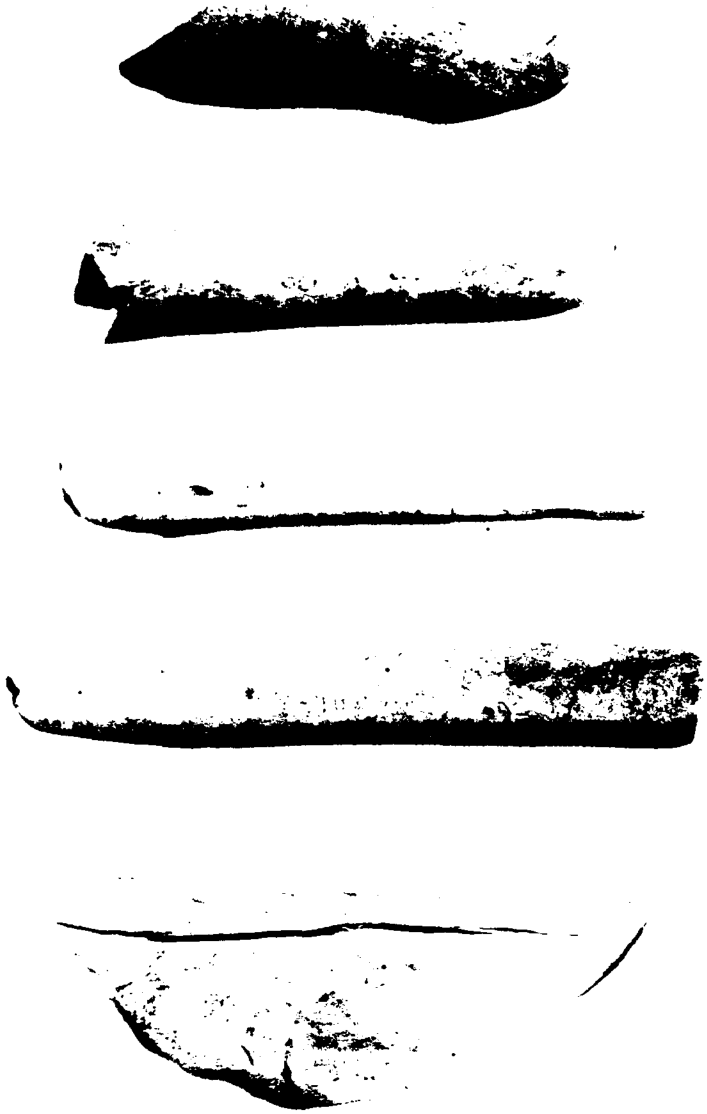
Total Number of Class 5 Specimens 1

Measurements: Too fragmentary to measure.

FAUNAL RESOURCE UTILIZATION

A second objective of faunal analysis was to provide information concerning strategies of procurement and consumption of faunal food resources employed by inhabitants of specific site locations within the project area. Different faunal species exhibit considerable variability in their size, spatial distribution and both seasonal and diurnal behavior (see Marchiando, Volume 1). The degree to which different species can be profitably exploited as secure and staple food resources is dependent in part upon these factors and in part upon the overall strategy of both faunal and floral food procurement engaged in by a given human population.

In this sense, a human population largely dependent upon the production of agricultural food products might be expected to exhibit a strategy of nondomesticated faunal species procurement considerably different from that of a human population whose subsistence was derived solely from procurement of nondomesticated floral and faunal species. In a similar sense, historic populations who employed domesticated faunal species as part of their overall subsistence might be expected to exhibit strategies of faunal species procurement and consumption which were considerably different from prehistoric populations who had no access to domesticated



Class 3

FIG. 6.2 Bone Tools: Class 3

faunal species.

Because of these considerations, analysis of faunal remains recovered from excavated site locations was directed toward providing information concerning four realms of economic or subsistence-related activities involving procurement and consumption of faunal species. Analysis directed toward isolating strategies of procurement included determining the age and minimum number of individuals for each species represented at a site location. Analysis directed toward isolating strategies of consumption included determining the way in which different species were butchered into muscle mass "packages," and the intensity of consumptive utilization of different species as monitored by evidence of marrow cracking.

In addition to these analyses, all specimens were examined for the presence of cut marks made by stone or metal implements, and for evidence of gnawing by

canines. Although these latter two observations are not direct monitors of subsistence-related utilization of faunal food resources, they do provide a kind of information concerning technology and faunal domestication generally unretrievable from other realms of the archeological record.

The following discussion will outline the analytical approaches taken and the format employed to describe faunal resource utilization from the excavated site locations. It should be noted that very few site locations yielded substantial numbers of faunal remains. For this reason, no systematic attempt has been made to discuss intersite variability with respect to strategies of procurement or consumption. The results of analysis are rather discussed in appropriate site reports (Section II), and are intended to serve as a descriptive body of information. Comparative statements are undertaken through summary in the site reports where warranted.

Minimum Number of Individuals

Through isolating the minimum number of individuals of each species present at each site it is possible to determine the extent to which a certain species was exploited. Once this is tabulated it is often possible to determine a) whether the site economy was based on domestic or nondomestic animals 2) the minimum number of people who could be supported by the faunal population 3) if the faunal remains suggest a heavy reliance on a particular food base (focalized) or a generalized strategy.

Because of the limited sample size, faunal specimens from each site were treated as a single analytical unit. This study unit provided the most conservative minimum number of individuals estimate possible.

Calculations of the minimum number of individuals for each site were derived from Chaplin (1973:70-75). Separate individuals were identified on the basis of age, side and duplication of parts. This information was drawn from the basic analysis provided by Harris. At no time were questionable bone identifications forced into a category. If a specific species identification was not possible a broader taxon was used (e.g. Artiodactyla). This broader taxon could represent a separate individual if it did not overlap an animal identified earlier. For example:

Species	Element	Age
Ovis/Capra	Humerus cpl., Right	Adult
Artiodactyla	Mandible cpl., Right	Immature
Artiodactyla	Humerus cpl., Left	Adult

Ovis/Capra is represented by one adult individual. Artiodactyla is represented by two individuals, an adult and an immature animal. *Ovis/Capra* is encompassed by the broader category of Artiodactyla. Although two Artiodactyla are represented, the left, adult humerus could be part of the adult *Ovis/Capra*; whereas the right Artiodactyla mandible could never belong to the adult *Ovis/Capra* because it is part of an immature animal. Thus the minimum number of individuals shown in the example would be one *Ovis/Capra* and one Artiodactyla.

The minimum number of individuals provides a conservative estimate of the number of animals at a given site and is the base from which one can examine faunal resource utilization strategies.

Age of Animals

The age of domestic animals butchered was studied to isolate further basic aspects of site economy. The age of the animal when butchered may suggest a specific economic purpose. All animals will be butchered and eaten when their economic usefulness no longer exists, but each animal might have a primary and secondary economic purpose. For example, *Ovis/Capra* meat is considered most edible when the animal is young. Meat becomes tough and more fiberous with age. If the remains of an immature *Ovis/Capra* were recovered it might suggest that its primary economic purpose was meat production while the adult *Ovis/Capra* might imply a primary economic purpose of either breeding or wool production and a secondary purpose of meat production. The point is that the meat from the animal will be eaten eventually, but was that animal raised primarily for its meat? It was hoped that this kind of analysis would be possible for the fauna recovered during excavation but the extremely small sample size limits any such interpretation at this time. Nevertheless, age has been included for the faunal materials.

The age of the animal was recorded by Harris whenever possible. The highly fragmentary condition of our sample made aging a problem. Two general age distinctions were assigned, Adult and Immature. Unfortunately the majority of bones recovered could not be aged.

Harris also based age identifications on mandible tooth eruption when possible. Due to the highly fragmentary condition of most mandibles from our sample, tooth eruption could not be monitored. For example, of 29 mandible fragments recovered from LA 12161, only eight could be aged.

Butchering Strategy

1. Meat Packages

An attempt was made to isolate high and low muscle mass meat packages to determine certain aspects of faunal consumption at each site location. Through the analysis of meat packages and the elements which represent them, it is possible to determine whether the animal was butchered and eaten at the site or butchered at another location and then transported to the site. It has been suggested (Human Systems Research 1972) that if an animal were killed several kilometers from a site, certain elements belonging to a low muscle mass classification (vertebra, skull, mandible, and lower leg) would not generally be transported long distances because too little meat is represented. Only meat packages with the maximum amount of meat would be carried long distances. In this case one would expect to find elements representing only high muscle mass meat packages (rib, scapula, and upper legs) at a site (Human Systems Research 1972:14-15). If the complete animal were butchered and consumed at a site one would expect to have both low and high muscle mass meat packages represented.

The presence of both high and low muscle mass meat packages at a single site location suggests that animals butchered were consumed at the site, not distributed and eaten by inhabitants of other locations.

The interpretation of elements represented on each site is important in determining the strategy of faunal resource procurement and consumption. Tables of species, minimum numbers of individuals and elements

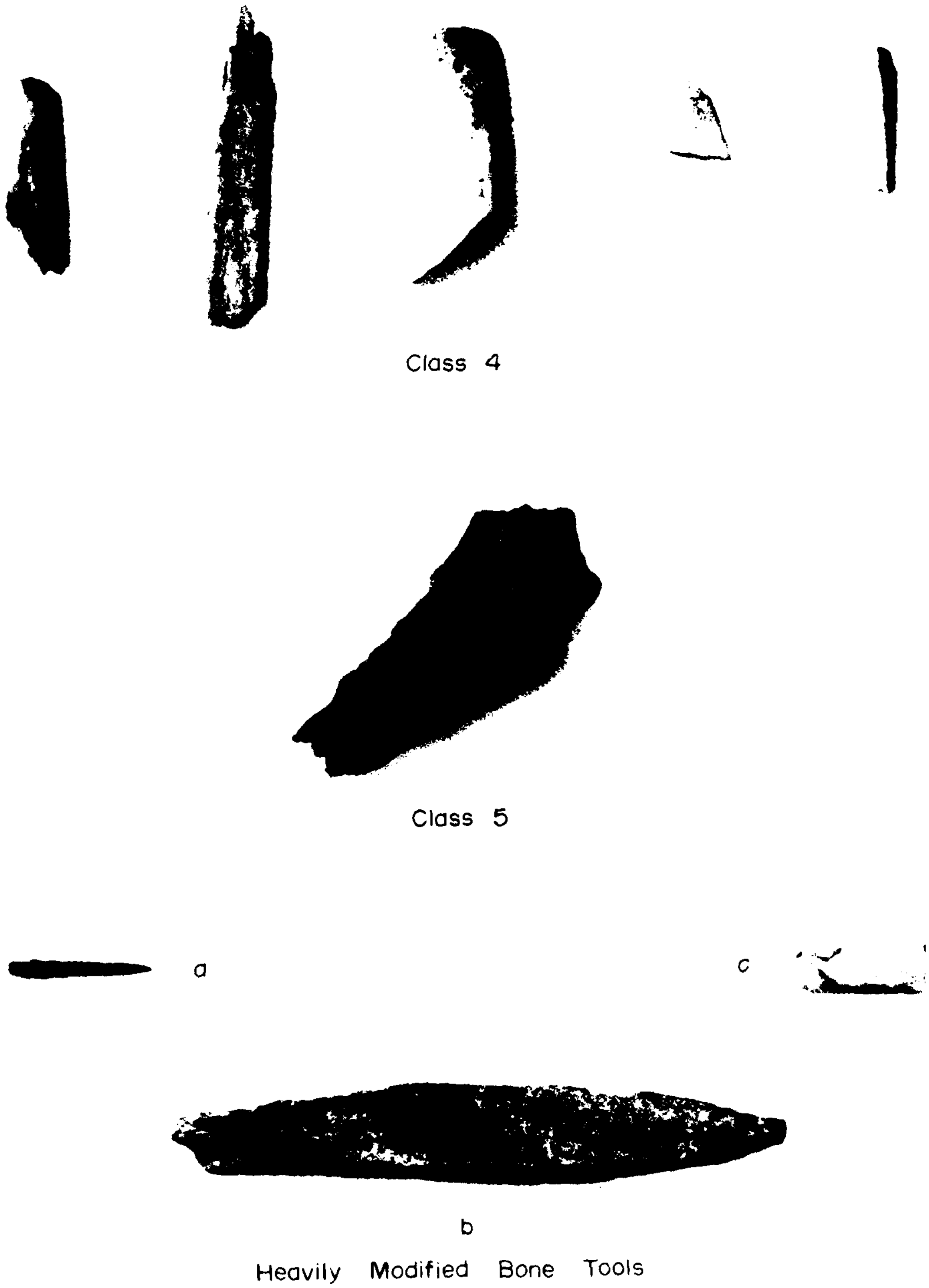


FIG. 6.3 Bone Tools: Classes 4 and 5 with Heavily Modified Bone Tools

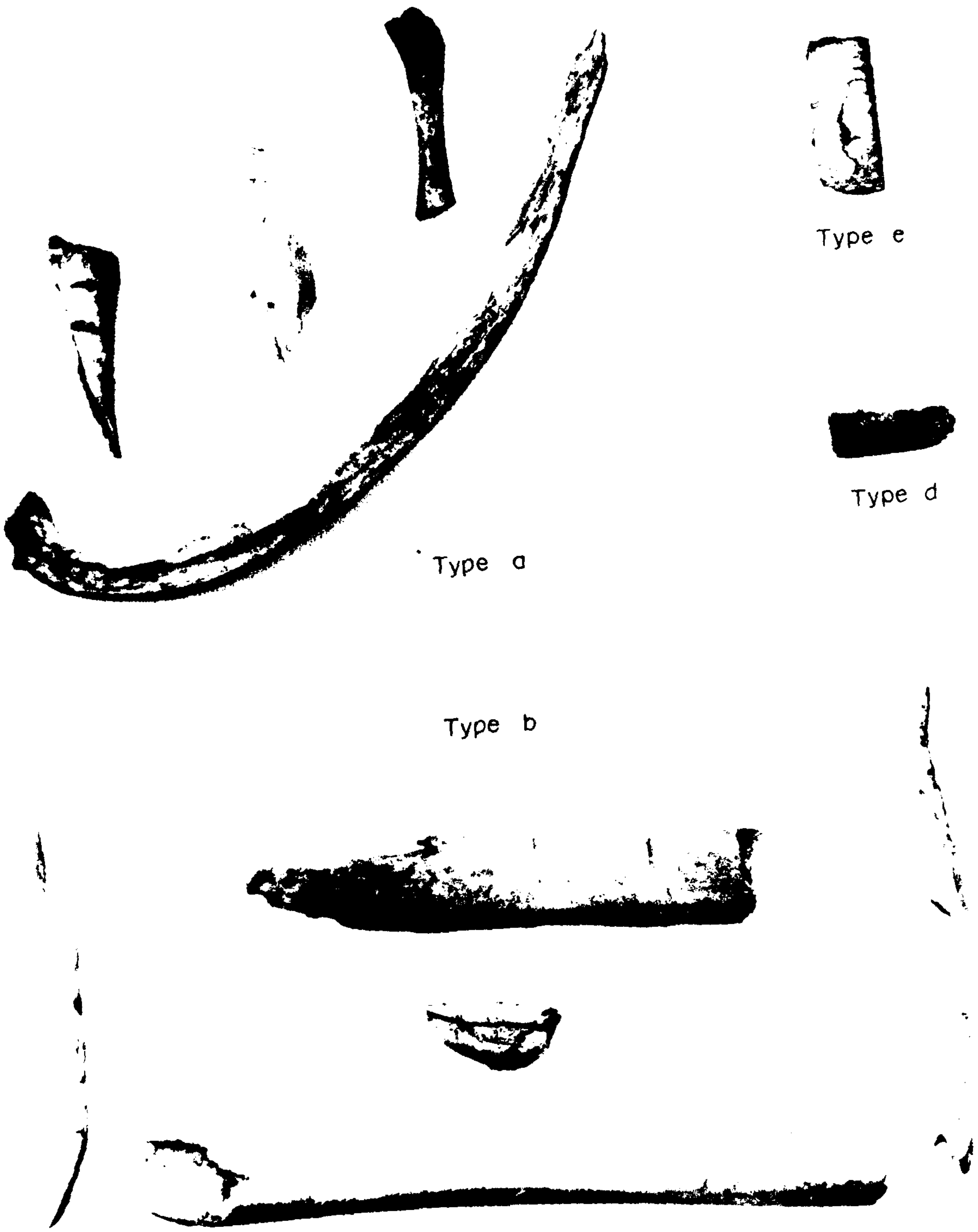


FIG. 6.4 Butchering Cut Marks: Types a, b, c and d

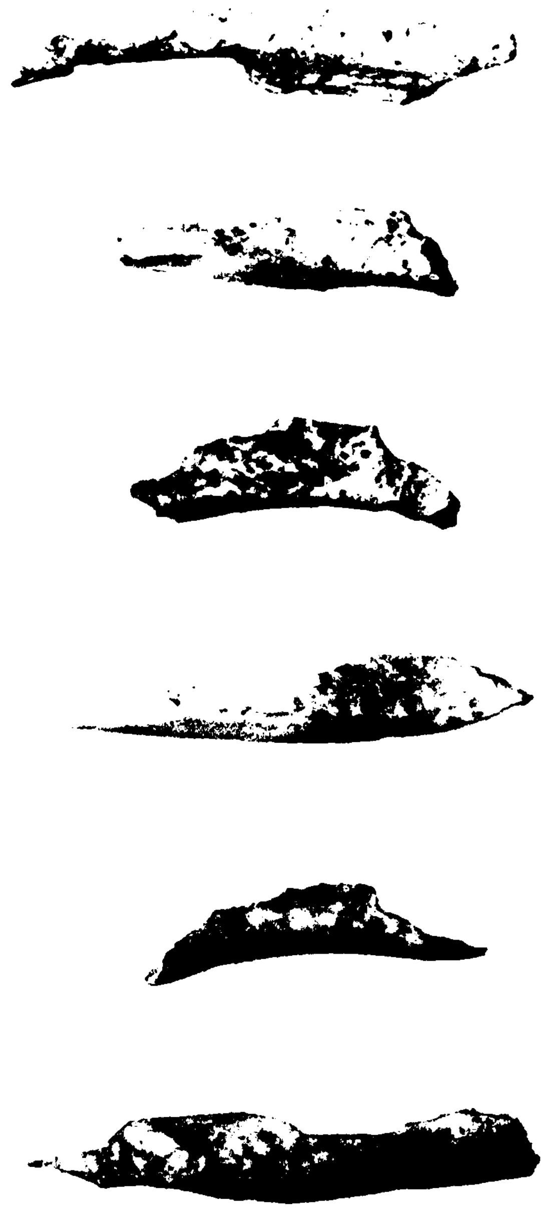


FIG. 6.5 Gnawed Bones: Type I

represented are included in each site report. Species categories at the top of each table represent the minimum number of individuals. Those at the bottom overlap all categories at the top. Elements represented on each site were consolidated when species or classes overlapped each other in any way.

Harris has grouped these size animals into the following overlapping classifications:

Mammal:	small:	rodent, mouse
	medium:	rabbit, dog, coyote
	large:	domestic sheep or goat through bison
Artiodactyla:	small:	domestic sheep or goat
	medium:	deer, pronghorn sheep
	large:	bison, elk

ELEMENTS REPRESENTED

TAXON	MINIMUM NO. INDIVIDUALS	LOW MUSCLE MASS: Vertebrae	Pelvis	Skull	Mandible	Lower leg	HIGH MUSCLE MASS: Ribs	Scapula	Upper leg	LONG BONE SHANK FRAGS.
Ovis/Capra	1		x	x	x	x				
Small Artiodactyla	1						x	x	x	
Total	2		x	x	x	x	x	x	x	

If *Ovis/Capra* elements were examined separately, only low muscle mass elements would be represented. Since the Artiodactyla elements may represent the same *Ovis/Capra* individual, it is necessary to consolidate the elements of both categories for this example. Consolidation of overlapping species and class elements provides a conservative estimate of the butchering strategy for a site and is critical in determining faunal resource utilization strategy.

2. Marrow Cracking

Marrow cracking is a process which reflects the intensity of utilization of animal resources. Bone marrow represents approximately 4.5% of a mammal's total body weight (Human Systems Research 1972:20). Marrow cracking is the process by which long bones are smashed to extract the marrow inside. Long bone shaft fragments are a direct by-product of this process (Human Systems Research 1972:21).

To examine the intensity of utilization of faunal resources at each site, long bone shaft fragments were counted and their percentage of total faunal remains calculated. These fragments were represented in animals ranging in size from medium to large mammals.

Long bone shaft fragments were recovered from ten sites. Unfortunately, the number of identifiable bones from LA 10110, LA 12465, LA 12486, LA 12494 and LA 12507 was minimal and thus no definite conclusions concerning marrow cracking could be drawn. Samples large enough to suggest that marrow extraction was being employed were recovered from LA 9138, LA 12161, LA 12438, LA 12449 and LA 12507.

Although marrow cracking occurs on several sites, its intensity varies. For example, marrow cracking is evident on LA 12161 and LA 9138 but percentages of long bone shaft fragments suggest a more intensive faunal utilization strategy at LA 12161 (see site report).

An additional table, Bone and Antler Element Breakage, was compiled for LA 9138 to summarize the types of breaks represented and to illustrate count differences of unbutchered elements, elements butchered during occupation and elements with recent breaks. These data also support the observation that marrow cracking was not practiced as extensively on LA 9138 as LA 12161.

3. Butchering Cut Marks

Cut marks were recorded on 25 bone fragments. Of these seven were made with a metal knife or axe (Type a), 10 with a stone tool (Type b) and on six others the type of tool used could not be determined (Type c). Types a and b are illustrated in Fig. 6.4. A definite distinction between bones cut with metal tools as opposed to stone tools could be observed. Cut marks made with a metal tool are characterized by a single groove exhibiting straight sides whereas those made with a stone tool are characterized by many grooves and irregular sides (Binford personal communication; Reher personal communication).

Two bones appear to have been sawed, one with a metal saw (Fig. 6.4 Type d). It was impossible to determine if a metal or stone saw was used on the other sawed fragment (Fig. 6.4 Type c).

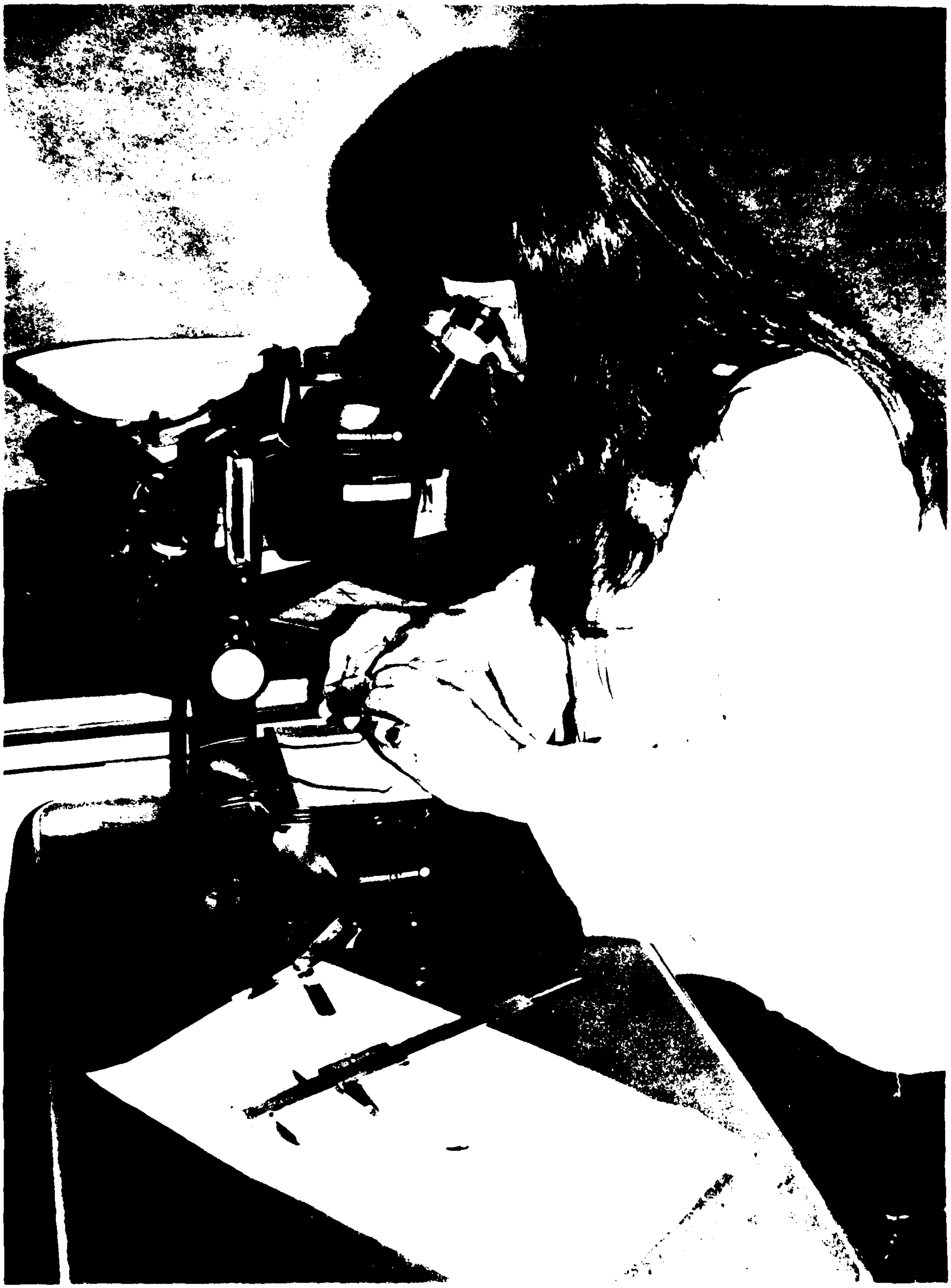
Of the four sites which contained bone with cut marks, two (LA 12161, LA 12449) showed evidence of the use of metal tools. In some cases, cut marks were the only evidence that metal tools had existed at the site.

4. Domestic Dog

Although only one *Canine* bone was recovered from LA 12161, we recovered evidence of the presence of carnivores. The chew marks left from a dog's teeth are easily recognizable (Binford personal communication; Reher personal communication) (see Fig. I.5.5, Type f). Although it is impossible to distinguish the gnaw marks of a domestic dog from those of a coyote or wolf, it is assumed that domestic dogs were used in sheep herding in the area.

SUMMARY

This study is by no means complete. A much more extensive examination of faunal remains in the Cochiti area is needed. With larger faunal samples, extremely valuable information can be gained through the study of faunal remains and their implications in utilization and butchering strategies. It is hoped that the approaches taken here will provide a basis both for future examination and reexamination of previously recovered faunal assemblages from the Middle Rio Grande region, such that a coherent statement can be made concerning human adaptive change through time in strategies of faunal resource procurement and consumption.



Chapter 7
Obsidian Hydration Analysis

CHARLES M. HAECKER

FACTORS AFFECTING THE RATE OF HYDRATION

As noted by Irving and Smith (1960:481), the validity in using the measurements of obsidian hydration rims depends upon a number of variables which affect the hydration rate on the surface of obsidian. The following factors must be considered:

Temperature

The rate of water absorption by the surface of obsidian is largely dependent on temperature. Artifacts which come from a very cold climate hydrate at a much slower rate than do artifacts from temperate or tropical regions. Even local differences in mean temperatures must be considered. Irving and Smith further note that:

> The possibility of different temperatures of exposure exist also within a single climatic zone. Because of its heat absorbing black color a piece of obsidian lying on the surface may experience temperatures much higher than one buried in the ground. The contrasts is likely to be most pronounced in deserts where a minimum cover of vegetation exists and artifacts may be exposed to the sun for great lengths of time. Under such conditions, the rate of hydration would be increased producing a thick rim in a relatively short time (Irving and Smith 1960:482-484).

In correlating data from site to site, or from area to area, or from surface collections to deeply buried specimens, the temperature factor must be kept in mind.

Composition of the Obsidian

"Obsidian is a glass composed of a mixture of some eight major components, plus a great number of minor components . . . Obsidians of different compositions may have different rates of hydration and a different temperature coefficient of the rate of hydration" (Irving and Smith 1960:484).

Burning

"Exposure of the obsidian artifact . . . to fire . . . alters the surfaces and affects the hydration after burning. Usually burning can be easily distinguished by a careful examination of the obsidian artifacts because the surface appears abnormally gray . . ." (Irving and Smith 1960: 485). The effects of fire ". . . are readily distinguishable in the thin sections."

Erosion

> . . . mechanical or chemical erosion can remove the relatively thin hydration layer . . . However, mechanical erosion takes several forms, such as blasting by wind-blown sand, and abrasion in water carrying large amounts of mud or sand . . . If the original, thicker hydration rim is eroded away, subsequent hydration will cause a new hydration layer to develop if the factors causing erosion are removed (Irving and Smith 1960:486).

Thus the hydration dating of an artifact that has undergone such mechanical erosion will produce a faulty date.

Artifact Reuse

It is sometimes the case at an archeological site that artifacts or their debitage were reused or redeposited by a later culture, thereby causing some initial confusion to the archeologist. Such a "recycling" process on obsidian can have an understandably adverse affect if such an obsidian artifact is dated by the hydration method, giving the site upon which it was found an earlier date than it actually has. Redeposition can also be caused by rodent activity, bringing obsidian with a thinner hydration layer to the surface.

HYDRATION ANALYSIS OF COCHITI RESERVOIR OBSIDIAN

A total of ninety-five sections were made from the obsidian samples taken from the following sites:

LA 12161–20 samples (10 from the surface; 10 from below surface down to 40cm).

LA 5014–10 samples (8 from the surface, 2 from Feature 3-1-1).

LA 12456–10 samples (from surface).

LA 12454–6 samples (from the surface and slightly below surface, depth unknown).

LA 12442–10 samples (from the surface and slightly below surface, depth unknown).

LA 12494–10 samples (from the surface down to 10cm).

LA 12486–10 samples (from surface).

LA 12496–10 samples (from surface).

LA 12522–8 samples (from surface).

LA 12468–1 sample (Archaic projectile point, depth unknown.

Attempts at trying to correlate the readings from these sites with the obsidian hydration data from the En Medio site in the Rio Puerco area were unsuccessful for the following reasons:

1. The En Medio site is deeply stratified, most of the strata having obsidian hydration readings with concomitant C14 dates. Since the resulting formula for the hydration rate is based on subsurface obsidian artifacts it

cannot be used for surface obsidian artifacts, due to the temperature and erosion factors.

2. Due to the surface nature of the sites in Cochiti Reservoir, all obsidian hydration samples were recovered from either the surface or just below the surface, making comparison to En Medio impossible.

3. The elevation at En Medio is at 6000 feet; the sites collected by OCA are at elevations between 5220-5320 feet. The differences of 700 to 800 feet in elevation would have an unknown effect on the hydration rate due to the difference in mean annual temperature. Fortunately a few of the excavated sites had relative dates based on artifact types i.e., pottery and projectile points. Furthermore, these dated sites bracketed the periods of Archaic up to the Historic, including some relative dated sites for the cultural periods in between. Thus the hydration readings from these relative dated sites could give some indication as to the relative dates of those sites without datable artifacts. Of course, in order to attempt such a dating method one must assume that such critical factors as temperature, erosion, and similarity in obsidian are equally similar at all collected sites. Since the sites collected by OCA are situated in the same geological context there is some justification for assuming *ceteris paribus*.

The method used in obtaining a relative date for each site was as follows:

1. Four readings were taken from a hydration band on a thin section, with a mean hydration reading derived for the slide.

2. A mean of the mean readings was then derived from the thin sections for the whole site, excluding those slides which had questionable readings i.e., the hydration band or the band having an ill-defined interior edge.

3. The standard deviation was derived from the mean of the means for each site (or stratum, in the case of LA 12161). Those readings above and below the norm set up by the standard deviation were eliminated. A new mean was then derived from the remaining slides, thus giving weight to those readings which clustered.

4. Those slides in which no hydration band was discernable were given consideration since the absence of a hydration band could be due to the fact that not enough time had elapsed for a hydration band to appear. Weight given to such slides was subjective since there is no way to tell why the band was absent. It could be due to the sand blasting of the artifact or simply a poorly prepared slide. In those cases where a hydration band was not apparent, another slide was made. If no hydration band appeared on the new thin section, then the slide was recorded as "no hydration visible."

The following sites are listed in chronological order from the most recent to the earliest, based on the mean micron reading of those thin sections which were within the parameters set up by standard deviation. Those samples having an asterisk were eliminated from the second mean reading since they were outside the parameters set up by the standard deviation.

LA 12161—Surface

Slide No.	Provenience	Mean Micron Reading
(1)	E4, level 0	3.50
(2)	I5, level 0	3.57
(3)	A6, level 0	3.97
(4)	G10, level 0	no hydration visible
(5)	A7, level 0	4.00
(6)	G10, level 0	3.85
(7)	D6, level 0	3.33
(8)	G11, level 0	4.55
*(9)	C3, level 0	8.17
(10)	F11, level 0	4.35

$x_1 = 4.42$ S.D. = 1.49 $x_2 = 3.95$

LA 12161—10cm to 40cm

Slide No.	Provenience	Mean Micron Reading
(11)	Room 1, level 2	no hydration visible
(12)	Room 1, level 2	1.55
(13)	Room 1, level 2	no hydration visible
(14)	Room 1, level 2	0.92
(15)	Room 1, level 2	no hydration visible
(16)	Room 1, level 2	no hydration visible
(17)	Room 1, level 2	no hydration visible
(18)	Room 1, level 2	no hydration visible
(19)	Room 1, level 2	1.80
(20)	Room 1, level 2	1.97

$x_1 = 1.56$ S.D. = 0.46 $x_2 = 1.77$

LA 12454—from surface and slightly below surface, shovel skimmed

Slide No.	Provenience	Mean Micron Reading
(39)	C4, level 1	4.92
(40)	A2, level 1	no hydration visible
(41)	B2, level 1	no hydration visible
(42)	J6, level 1	4.00
(43)	C6, level 1	4.21
*(44)	E4, level 1	7.80

$x_1 = 5.23$ S.D. = 1.76 $x_2 = 4.38$

LA 12522—surface

Slide No.	Provenience	Mean Micron Reading
(93)	I1 & 2, J1 & 2, surface	no hydration visible
(94)	I1 & 2, J1 & 2, surface	3.72
(95)	surface	5.15

$x_1 = 4.44$ S.D. = 1.01 $x_2 = 4.44$

LA 12522—from Feature 3, Level 1 (0 to 20cm)

Slide No.	Provenience	Mean Micron Reading
(85)	Feature 3, level 1	no hydration visible
(86)	Feature 3, level 1	5.32
(87)	Feature 3, level 1	5.00
(88)	Feature 3, level 1	4.00
*(89)	Feature 3, level 1	no hydration visible

$x_1 = 4.77$ S.D. = 0.69 $x_2 = 5.16$

LA 12486—surface

Slide No.	Provenience	Mean Micron Reading
(65)	G9, level 0	no hydration visible
*(66)	D10, level 0	12.62 (poor—edge blurred)
(67)	K6, level 0	4.00
(68)	G9, level 0	5.90
(69)	H13, level 0	no hydration visible
(70)	I10, level 0	no hydration visible
(71)	C4, level 0	Grants obsidian
(72)	I16, level 0	no hydration visible
(73)	G13, level 0	4.70
(74)	A13, level 0	no hydration visible

$x_1 = 6.81$ S.D. = 3.96 $x_2 = 4.87$

LA 5014—from Feature 7, level 2 (10cm to 20cm) and surface

Slide No.	Provenience	Mean Micron Reading
(31)	Feature 7, level 2	no hydration visible
*(32)	Feature 7, level 2	2.21
(33)	Feature 7, level 2	no hydration visible
(34)	Feature 7, level 2	no hydration visible
(35)	Feature 7, level 2	no hydration visible
(36)	Feature 7, level 2	5.97
(37)	Feature 7, level 2	4.60
(38)	Feature 7, level 2	5.00
(91)	surface	poor-blurred
(92)	surface	no hydration visible

$x_1 = 4.45$ S.D. = 1.60 $x_2 = 5.19$

LA 12496—Surface

Slide No.	Provenience	Mean Micron Reading
(75)	p20, level 0	6.07
(76)	p5, level 0	8.12
*(77)	p8, level 0	9.20
(78)	p5, level 0	no hydration visible
(79)	p8, level 0	5.32
*(80)	p20, level 0	4.28 (poor—edge damaged)
(81)	p20, level 0	6.95
(82)	p5, level 0	6.18
(83)	p8, level 0	5.14
*(84)	p20, level 0	9.12

$x_1 = 6.74$ S.D. = 1.74 $x_2 = 6.34$

LA 12442—from surface and slightly below surface, shovel skimmed

Slide No.	Provenience	Mean Micron Reading
(45)	B7, level 1	no hydration visible
(46)	E8, level 1	6.78
(47)	B9, level 1	7.12
*(48)	B9, level 1	7.45
(49)	B7, level 1	7.02
(50)	B9, level 1	no hydration visible
(51)	E8, level 1	no hydration visible
*(52)	B21, level 1	6.15
*(53)	B8, level 1	6.15
(54)	F9, level 1	no hydration visible

$x_1 = 6.78$ S.D. = 0.53 $x_2 = 6.97$

LA 12456—surface

Slide No.	Provenience	Mean Micron Reading
(21)	J42, level 0	6.10
(22)	G43, level 0	9.00
(23)	J28, level 0	9.70
(24)	K18, level 0	no hydration visible
*(25)	H34, level 0	10.77
(26)	K31, level 0	7.22
(27)	J30, level 0	no hydration visible
(28)	J33, level 0	8.30
(29)	E39, level 0	7.70
*(30)	E40, level 0	3.80

$x_1 = 9.80$ S.D. = 2.21 $x_2 \cdot 8.09$

LA 12468—archaic projectile point, surface

Slide No.	Provenience	Mean Micron Reading
(90)	Prov. 3, level 0	9.80

$x = 9.80$ S.D. = 0

LA 12494—surface down to 10cm

Slide No.	Provenience	Mean Micron Reading
(55)	T36, level 1	9.12
(56)	T36, level 1	9.52
(57)	T35, level 1	no hydration visible
*(58)	B34, level 1	12.60
(59)	H30, level 1	11.40
*(60)	X38, level 1	12.85
*(61)	E39, level 1	7.38
(62)	T35, level 1	10.00
(63)	O36, level 1	9.20
(64)	R34, level 1	10.78

$x_1 = 10.32$ S.D. = 1.77 $x_2 = 10.00$

The following relative dated sites with their mean hydration readings are listed in chronological order from latest to earliest. Note the corresponding increase in the micron readings:

LA 12161 (Historic 18th century)—3.95 surface; 1.77 10cm to 40cm below surface

LA 12454 (Pueblo IV)—4.38

LA 12522 (Pueblo III-IV)—4.44 surface; 5.15 0 to 20cm below surface

LA 5014 (Pueblo III)—5.19

LA 12494 (Basketmaker II point)—7.38; site has reading of 10.00

LA 12468 (Archaic point)—9.80

The following sites without known relative dates are listed in order of increasing micron measurement. The probable relative dates assigned to the sites are based on the readings from the above listed sites:

LA 12486—4.87; Pueblo III-IV

LA 12496 6.34; Basketmaker, possibly early Pueblo period

LA 12442 6.97; early Basketmaker, possibly Late Archaic

LA 12456 8.09; Archaic

It should be kept in mind that these relative date assignments are based on interpolation, which in turn is based on site readings with rather large standard deviations. However, it is encouraging that the known relative dated sites produced a satisfactory mathematical progression in terms of their micron readings.

There is also the problem that some of the surface sites have obsidian artifacts representing a number of cultural periods, the resulting mean micron reading for the site giving a false relative date for the site. Such a possible example would be LA 12494 which has a Basketmaker II projectile point with a measurement of 7.38 but the site producing a mean reading of 10.00 that would mean the Archaic period for the site. In other words, the dating of surface obsidian is good when working in increments of a thousand years but not in terms of hundreds of years.

This report must be considered as a preliminary study concerning the possibility of using surface obsidian for relative dating of sites. Further work will be done by this researcher with the hopes that such a possibility can be realized.

Chapter 8
Definition of Intrasite Activity Areas

RICHARD C. CHAPMAN

GOALS

A major objective which conditioned the analyses of data recovered during the field and laboratory phases of the Cochiti Reservoir Project was to isolate variability in the kind and distribution of subsistence related activities performed within each excavated site location. Any attempt to define the nature and spatial placement of activities within a site location must begin with an examination of possible determinants of differential activity performance. Unfortunately, anthropologists have rarely modeled these determinants

Some analyses of archeological data have been conducted in an attempt to isolate patterning in the performance of different sets of activities within the boundaries of a site location. The majority of these analyses have focused upon the applicability of particular methodological techniques to array artifactual data rather than upon examination of possible behavioral strategies which might result in the structure of such patterning. The approaches described in this chapter are similar in this respect, but an attempt will be made to posit assumptions concerning activity specific behavior which underlie the approaches taken and to examine critically those assumptions in light of further research needs.

FACTORS WHICH CONDITION PATTERNING OF ACTIVITY PERFORMANCE

It is acknowledged that many factors have contributed to the distribution of architectural and artifactual materials at site locations. Of primary interest to the archeologist is an attempt to examine and delineate behavioral variables which have conditioned the spatial patterning of activity performance. Nonbehavioral variables, however, may significantly alter behaviorally determined patterning. Archeologists have commonly recognized that postdepositional erosion of a site surface will alter the spatial distribution of artifactual debris at a site location. Recovery techniques employed during field excavation may also condition the selection of analytical techniques designed to elicit patterning. For example, the basic unit of recovery for many sites in Cochiti Reservoir was an arbitrary or natural vertical level within a 1.0m x 1.0m grid unit: whereas the basic unit of recovery for other site locations was an arbitrary or natural stratum within the confines of an architectural feature such as a room or hearth.

The structure of artifactual data which could be analytically treated was thus a three-dimensional array of small assemblages of artifactual remains. Although spatial relationships among particular assemblage units within the array could be defined, spatial relationships between individual artifacts comprising or encompassed by each recovery unit could not be defined, which thus limited potential application of certain analytical techniques such as a cluster analysis for delineating spatial distributions.

For the present project, it was felt that the most productive approach toward definition of the structure of artifact deposition within particular sites should take the form of evaluating similarities and differences among recovery units in terms of content and frequency such that larger assemblages which encompassed the smaller field recovery units could be defined for comparative analysis. Since the field procedure entailed two basic spatial units for recovery (features or grid units), each will be discussed below.

Architectural Structures

The degree to which the construction and placement of architectural features within a site location condition the kind and location of subsequent activity performance at that site location has rarely been addressed explicitly in the archeological literature. Until recently, previous archeological research in the American Southwest has tended to focus analysis toward recovery and explanation of artifactual remains from the interiors of structures such as rooms. Implicit in this kind of analytical approach is the assumption that the vast majority of activities pursued by the occupants of a site location were conducted within the confines of such structures.

It has been assumed during analysis of the Cochiti Reservoir archeological data that the kind and placement of architectural structures within a site location may have served to condition the places within the site where different activities were performed. In this sense, the location of a hearth facility, once constructed, may have conditioned the specific locations within a site where cooking activities were performed. In similar fashion, it has been assumed that construction of architectural facilities such as walls or rooms is conditioned by needs to create relatively protected areas within a site for performance of specific activities.

It has not been assumed, however, that all activities routinely performed at a site location were necessarily undertaken within or nearby architectural features or structures. In light of this, the general analytical approach taken to isolate variability in kind and location of activities performed within site locations has focused upon the distribution of artifactual remains rather than the distribution of architectural structures.

Artifact Distributions

As mentioned above, much previous distributional analysis of artifact assemblages has been undertaken with the primary intent of evaluating the utility of different techniques to isolate patterning among the kinds and spatial proximity of artifact classes. Some of the more productive effort in this regard is reflected by the work of Whallon in evaluating the utility of dimensional analysis (Whallon 1973), and nearest neighbor analysis (Whallon 1974), Speth and Johnson (1976) in evaluating

the liabilities of different data structures with respect to correlation analysis, and Vierra and Taylor (1974) in evaluating the utility of factor analysis to isolate spatial patterning.

Other attempts to isolate spatial patterning in the distribution of artifactual debris have dealt with univariate rather than multivariate techniques, in which either raw frequency counts or adjusted counts have been employed to isolate differential occurrence and density of specific artifact classes within a site location. Techniques such as this are listed in Binford *et al.* (1970) and Hyatt *et al.* (1974), among many others.

Although the sum of this research has resulted in productive evaluation of various techniques for isolating patterning in the spatial distribution of various artifact classes within a site location, the manner in which this patterning can be employed as information about the spatial patterning in activity performance has not been rigorously approached. In this sense, there has been little serious inquiry into modeling behavioral determinants of artifact deposition within a site location such that meaning can be assigned to the patterning exhibited among those artifacts recovered from an archeological context.

An implicit assumption along these lines can be perceived in previous research, however. This assumption essentially postulates two conditions under which artifact assemblages are generated: first, that routine performance of particular activities will result in deposition of a definable assemblage of artifactual by-products which can be distinguished from other such assemblages through analysis of assemblage content; and second, that the artifactual by-products deposited as a function of routine activity performance will be distributed in more or less uniform density across an area whose size and shape reflects the amount of space within a site which was actually "taken up" through performing that activity.

It is felt that neither of these assumptions have been well warranted at this time. For purposes of the Cochiti Reservoir Project, both of these assumptions were initially treated as tentative behavioral hypotheses which merited examination through analysis of the archeological record. In light of this methodological approach, it was felt that specific intrasite analytical techniques should be developed which could be used to evaluate the assumptions, rather than techniques which would essentially result in patterning reflecting the use of the assumptions.

For example, many of the multivariate techniques for isolating patterning among artifact classes, or artifact attribute variability across space, are predicated upon first assessing the degree to which particular artifacts or attributes to which functional meaning have been assigned covary in space. An approach of this kind imposes meaning upon the output of the analysis before the analysis is conducted, and is thus of little utility for evaluating the original assumptions in light of patterning elicited.

If, on the other hand, patterning in the spatial distribution of artifactual remains could be elicited through independent techniques which do not employ attribute variability conditioned by the assumptions themselves, resultant patterning can be profitably evaluated in light of variability felt to reflect behavior for which the assumptions have been employed to explain.

ANALYTICAL PROCEDURES

The basic analytical strategy employed to define structures of artifact distribution within site location was that of delineating a set of unidimensional arrays of artifact distribution within each site, such that the spatial patterning could subsequently be evaluated in light of the attribute "content" contributing to that patterning.

Arrays of artifact distributions were developed for ceramic artifacts and lithic artifacts, including debitage, small angular debris, large angular debris, cores, hammerstones, ground stone and facially retouched artifacts. In cases where site locations were characterized by distributions of firecracked rock and larger slabs or clasts which may have represented deflated or eroded hearth features, those two classes of materials were treated as well.

Arrays of artifact distributions were developed for each gross artifact class through employing either frequency counts or weight of artifacts within collection units. Collection units, as defined through excavation, were generally strata within architectural features such as rooms or levels within grid squares.

Two techniques for arraying artifact or material distributions within site locations were employed. Low count items, including cores, large angular debris, hammerstones, manos, metates and facially retouched artifacts, were distributed by frequency count within collection units. Ceramic fragments were also distributed by frequency count, although in some cases substantial numbers of ceramic fragments were recovered within site locations.

Debitage and small angular debris, which occurred in substantially greater frequencies within site locations, were arrayed through a different technique employing weight rather than frequency counts. In similar fashion, firecracked rock and possible hearth elements from deflated hearth facilities were distributed as weight values rather than as frequency counts.

An underlying concern in choosing weight rather than frequency for these classes of artifacts and materials was that of monitoring possible differences in the duration or recurrence of activity performance within each site location. It was felt that the summed weight of these artifact and material classes by collection unit would provide a kind of volumetric estimate for this purpose which might be obscured by frequency counts alone. The initial objectives of the distributional analysis were to employ both weight and frequency count estimates of debitage and small angular debris occurrence, but time ultimately did not permit systematic use of frequency counts.

Firecracked rock and hearth elements were routinely weighed to the nearest 0.25 kilogram by collection unit as part of the field recovery process. Debitage and small angular debris were weighed to the nearest gram by collection unit as part of the laboratory analysis.

1. Z-Score Distributions

The technique employed to array weight variability within site locations for debitage and small angular debris, firecracked rock and hearth elements involved

transforming raw weight values by collection unit into z-scores, and then generating isopleth maps based upon the z-score distribution for each population of artifacts or material.

A z-score is calculated as follows:

$$z = \frac{x - \overline{X}}{s}$$

where x is the value of the case, $\overline{X}$ is the mean of the population, and s is the standard deviation of the population. A z-score is thus a figure which states how many standard deviation units a particular case varies above or below the mean of the population from which the case was drawn.

It is important to note that the z-score statistic does not "normalize" or otherwise transform the actual distribution of raw values comprising the population. If the population of raw values is normally distributed, the distribution of z-scores calculated for that population will be normally distributed as well, about a mean of zero. If the population of raw values is skewed to the left or right of the mean, the distribution of z-scores will be skewed as well. The "shape" of a curve defining a population of raw values and a population of z-scores calculated from those values will thus be identical. The only difference between a population of raw values and a population of z-scores calculated upon those raw values is that the population of z-scores will have a mean of zero, a variance of zero and a standard deviation of one (Roscoe 1969:54-56).

It is felt that z-score distributions offer certain advantages in generating isopleth maps of artifact density when compared with employing raw counts or weights for that purpose, especially when many site locations must be treated analytically. When raw values are employed for generating isopleth maps, the most critical decision which must be made at the outset is that of determining how the population of values should be stratified into a finite scale from low to high densities. For example, if a population of grid units were characterized by raw weight values ranging from 1.0g to 1000g, the problem becomes one of deciding an effective means of stratifying that range into a finite set of values which can be employed to delineate isopleth lines. This could be achieved through an arbitrary designation of five 200g increments as values for that purpose (i.e. designating the first isopleth to encompass all grid units characterized by raw values between 1.0g and 200g, the second isopleth to encompass all grid units characterized by raw values between 201g and 400g, etc.), or any other scale of increments.

In the absence of knowing something about the nature of the population, however, this procedure could result in uninformative output. In this sense, if the mean value for the population described above were 10.0 grams with a standard deviation of 20.0g, the first isopleth line would encompass all of the grid units, and secondary isopleth lines would encompass only a very few individual grid units.

If the same population is described as a set of z-scores, however, the distribution of z-scores will reflect the actual structure of the raw value distribution, and will further permit stratification of that distribution according to a known set of standard deviation values derived from the population itself. Isopleth maps illustrating the structure of artifact density within a single site location can thus be generated economically. Through employing the same technique across several site locations, a degree of comparability among such maps can be achieved regardless of the actual raw values comprising the population of each site.

2. Definition of Analytical Units

The general strategy employed to define analytical units within site locations based upon the density distribution of artifactual remains will be described below.

A population of collection units (strata within rooms or grid squares) was initially defined for each class of artifacts or material. A collection unit was included in the population only if it contained artifacts or materials representative of the class. Thus the population of collection units defined for debitage and small angular debris would consist only of those strata within rooms or grid squares which contained debitage or small angular debris.

This initial definition generally entailed a preliminary evaluation of the physical relationships among strata within horizontally defined units, with the result that in some cases, two or more strata defined during field recovery would be collapsed into a single collection unit for purposes of creating isopleths. Examples of this are found in several nonstructural site locations in which the surface collections and subsurface levels of grid units were collapsed into single [illegible] for purposes of analysis because of the deflated [illegible] the entire site location.

Z-scores were then [illegible] within a population and [illegible] employing [illegible] standard deviation [illegible] intervals. Maps were generated [illegible] class of artifacts or materials [illegible] overlay fashion to ascertain [illegible] relationships among densities of the different classes.

In cases where architectural features had been employed to define collection units, preliminary z-score distributions were calculated upon nonarchitectural or grid square collection units. In general, it was observed that architectural features encompassed significantly higher relative frequencies and weights of artifacts, and that including such collection units in the overall z-score distribution for a site tended to obscure variability in density patterning characterizing the nonarchitectural collection units.

After all isopleth maps of debitage and small angular debris, firecracked rock and hearth elements, and distribution maps of ceramic fragments and low count lithic artifacts had been drawn, they were used in overlay fashion to define larger assemblages which could be treated as analytical units.

The definition of horizontal provenience locales within site locations was an inspectional process, and is felt to have been one of the weaker points in the entire distributional analysis, given an evaluation of content variability among the assemblages so defined. Underlying the definition of provenience locales was an assumption that such locales should be delineated to encompass covariant high density distributions of different artifactual and material remains, and that the set of proveniences de-

fined should encompass together as much of the total site area as possible. This analytical approach essentially reflected an expectation that activity performance within a site location in the past would be organized according to what has been termed a "dispersed activity area" model (Speth and Johnson 1976:50), in that the material by-products of activity performance would be distributed more or less uniformly across an area within a site where the activities were undertaken. Given this expectation, it was felt that the structure of artifact and material deposition across the site area should reflect a patterning of high density "epicenters," each of which, if defined as an assemblage, could be subjected to comparative content analysis to isolate the kinds of activities which were performed in the vicinity.

Provenience locales, as illustrated and described in the site reports, were defined in part according to this general set of expectations. Some confusion with respect to these conditioning assumptions was introduced through another concern underlying the manner in which provenience locales were delimited within sites characterized by no architectural features such as rooms or walls. The majority of these sites exhibited either partially intact hearth facilities, or areas characterized by larger slabs or clasts and firecracked rock indicative of deflated hearth facilities. It was felt an attempt should be made where possible to distinguish artifactual debris concentrations or distributions based in part upon their proximity to hearth areas. Because of this concern, several provenience locales were defined to encompass a single hearth or hearth area, associated distributions of firecracked rock, and any high density "epicenters" of debitage and small angular debris within the near proximity of the hearth.

Provenience locales were thus defined primarily through spatial distribution of materials indicative of hearth usage, if present, and debitage concentrations. Other kinds of artifactual debris encompassed within those provenience boundaries were then analytically treated as part of the artifact assemblage, but were not generally used to define provenience boundaries themselves.

SUMMARY

It is felt that the analytical techniques employed to approach the problem of identifying the structure of site space utilization proved productive in some respects, and in other respects offer considerable room for improvement.

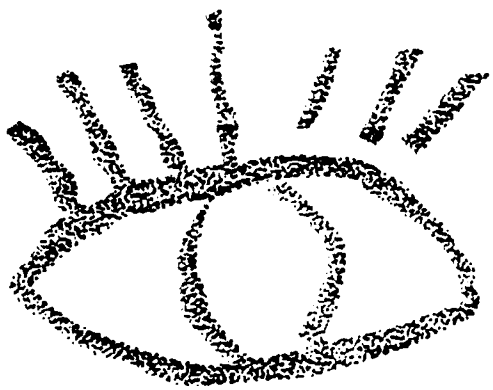
One clear result of the analysis is that a major research investment into modeling determinants of site space utilization strategies must be undertaken if the patterning of material distribution within the archeological record is to be used as productive information about past human behavior. Such research is at present disparate, although preliminary results of the analysis undertaken during this phase of the Cochiti Reservoir Project can be employed to suggest some avenues which could be profitably investigated.

Speth and Johnson (1976:50-53) suggest four general behavioral stances concerning activity performance and artifact deposition which might be considered as possible models worthy of refinement in this regard. They suggest that activity performance within a site location might be modeled as either a dispersed set of spatial loci within which particular functionally specific activities were performed, or as a single spatial locus or a set of loci of "agglomerated activity areas," within which a variety of functionally specific activities were performed. They further suggest that trash disposal might be viewed as either dispersed in nature or "agglomerated" in nature as a function of periodic and systematic cleaning of activity areas.

Distributional analysis of material remains from site locations within the permanent pool of Cochiti Reservoir indicates the possibility that different activity performance and trash disposal strategies may well be operative within a single site location more or less simultaneously with respect to different classes of artifactual and material remains.

Examples of this possibility can be illustrated through comparing the distribution of ceramics which are recurrently manifest as relatively continuous scatters encompassed by blocks of contiguous grid units. High densities of debitage and small angular debris, however, are recurrently manifest as linear, often crescentic distributions. These crescentic distributions often face inward toward an area of the site which exhibits very little in the way of any artifactual debris. It could thus be suggested that the distribution of debitage and small angular debris might reflect systematic cleaning of debris from areas where activities were performed, and disposal of that debris near the perimeters of those areas; whereas the distribution of ceramic artifacts may represent dispersed trash disposal.

It is imperative that additional efforts be made to model behavioral determinants of site space utilization coupled with a refinement of analytical techniques if patterning of material distribution within the archeological record is to provide productive information about human behavior.



Chapter 9
Description of Twenty-seven Sites in the Permanent Pool of Cochiti Reservoir

RICHARD C. CHAPMAN, JAN V. BIELLA, JEANNE A. SCHUTT, JAMES G. ENLOE, PATRICIA J. MARCHIANDO, A.H. WARREN and JOHN R. STEIN

LA 9138

LA 9138 is a four provenience† multicomponent Anasazi-Historic Period site which is located on the west side of the Rio Grande River approximately two kilometers north of the mouth of Drainage Basin No. 24. It is situated on an east sloping gravel bench at the base of a talus slope and lies at an elevation of 5300 ft. Dominant vegetative species in the vicinity of the site are juniper and cholla. LA 9138 is located in the Upper Sonoran vegetative community.

Two prehistoric Anasazi P-III/P-IV structures and seven 18th century historic structures were defined. These structures were distributed along a bench for a linear distance of 125 meters. An extensive network of basalt walls also extended along the bench. One major portion of the walls paralleled the river for a distance of 650 meters. Periodically, this wall was intersected with other walls which were perpendicular to the main wall. Although the walls served as a boundary for the site, their association with either the historic or prehistoric occupation is unclear.

PREHISTORIC OCCUPATION

Two noncontiguous structures, Rooms 6 and 7, represent a late P-III to intermediate P-IV Anasazi occupation at LA 9138. Although ceramic assemblages from both rooms are similar, they may not represent contemporaneous occupations.

These rooms are located in Provenience 3. This provenience is situated on a gravel bench located 50 meters west of the river. The bench was covered with grama grass, rabbitbrush and occasional juniper trees. Thick stands of juniper and cholla covered the alluvial flats below the bench.

Method of Excavation

The provenience was horizontally stratified into 2m x 2m grid squares. The base line of this grid system was oriented north-south. A total of 110 grid units (440 square meters) was surface collected. Portions of three grid units (E6, E9 and F9) associated with Rooms 6 and 7 were excavated to a depth of 30cm. Both rooms were completely excavated.

Architecture

Room 6:

Shape: Room 6 was a semisubterranean oval structure located 20cm below the ground surface.

Orientation: Not possible to define due to shape.

Condition: Room 6 was not vandalized.

Interior Room Dimensions: Room 6 is an oval structure with a north-south axis 1.85m in length and an east-west axis of 2.15m.

Walls: Numerous basalt boulders and slabs were observed on the surface but direct association with the subsurface feature was not indicated. Existing walls of the structure were constructed through excavation into the ground surface, and were not faced with rock elements or plaster.

Entrances: No entrances were found.

Floors: This circular feature was excavated into hard sand, and the floor was located 20cm below the original ground surface. The floor was well prepared, hard-packed earth with an ash patina over the entire surface.

Roofing: No evidence of roofing was found.

Interior Features:

Hearth: A hearth with an adobe rim was found in the northeast quadrant of the room. It was basin shaped in cross section, 10cm deep and 30cm in diameter and lined with adobe. Three river worn basalt slabs were associated with this hearth.

Room Fill: The fill consisted of sandy brown loam free of pebbles and cobbles. Ceramic and lithic debris were recovered from the room fill and were collected as a single unit (level 1).

Rubble: It was not possible to associate rubble in the area with the semisubterranean room.

Exterior Fill: An approximately 3m x 3m area over and surrounding Room 6 was excavated to the original ground surface (47cm) to determine the type of structure present. The only cultural material recovered from the exterior room area was found in a portion of grid E6 at surface level and included sherds and lithics.

Room 7:

Room 7 was excavated in arbitrary levels that were

†During the 1975 survey LA 9138 was described as a six provenience site location. Proveniences 1 and 2 correspond exactly for the survey and excavation documentation. Provenience 3 in this report encompasses survey Proveniences 3, 4 and 5. Survey Provenience 6 corresponds to the fourth provenience presented in this report.

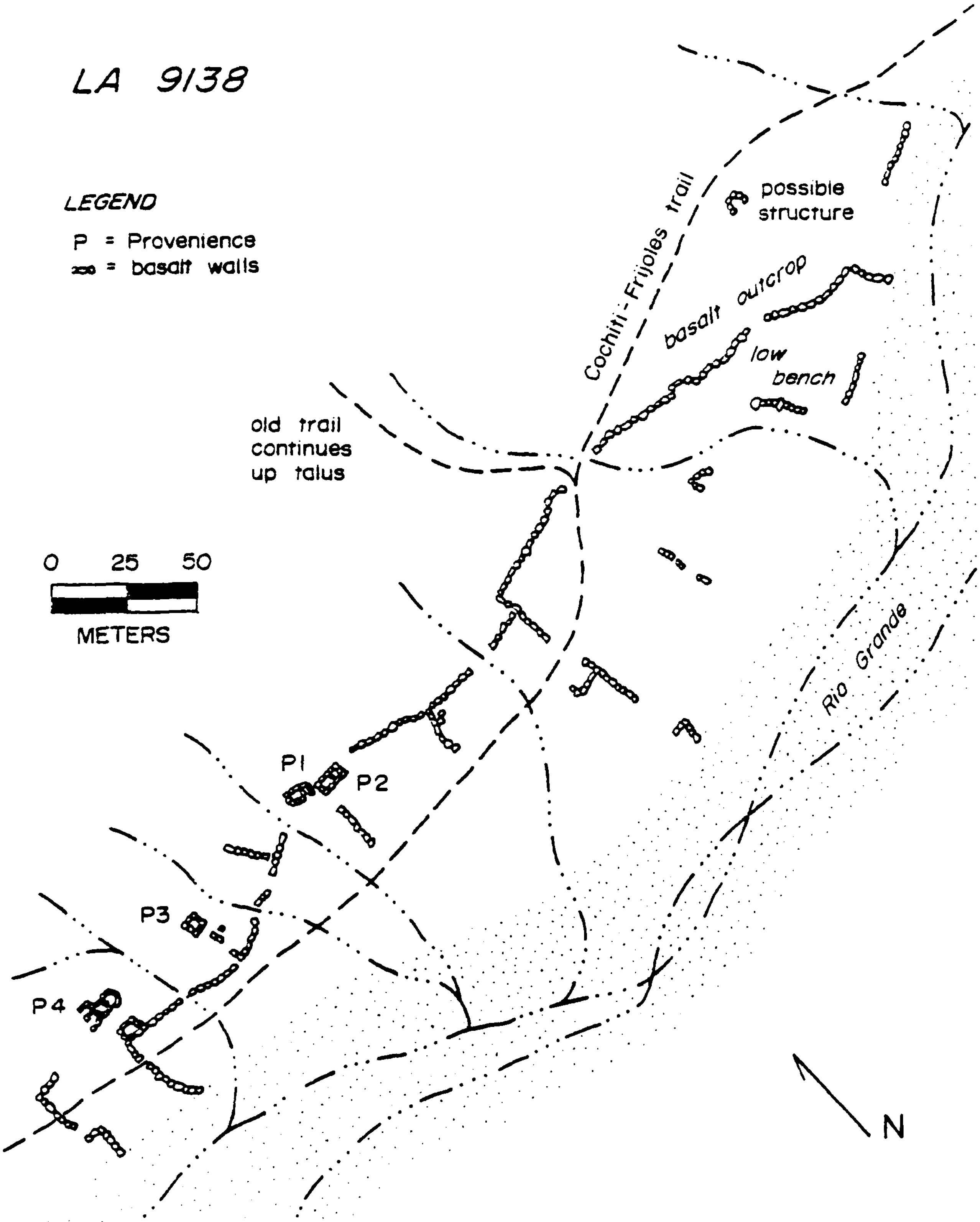


FIG. 9.1 LA 9138 Site Map

superimposed over natural strata. All soil samples were taken from natural strata.

Shape: Semisubterranean rectangular structure.

Orientation: The long axis of the room was 30 degrees east of true north.

Condition: Room 7 did not appear to have been vandalized.

Interior Room Dimensions:

	Length	Width	Height 1st Floor	Height 2nd Floor
North	1.20m	.22m	.50m to .75m	.65m to .95m
South	1.40m	.29m	.35m to .70m	.63m to .98m
East	1.50m	.25m	.33m to .45m	.54m to .68m
West	1.75m	.30m	.70m to .80m	.52m to 1.04m

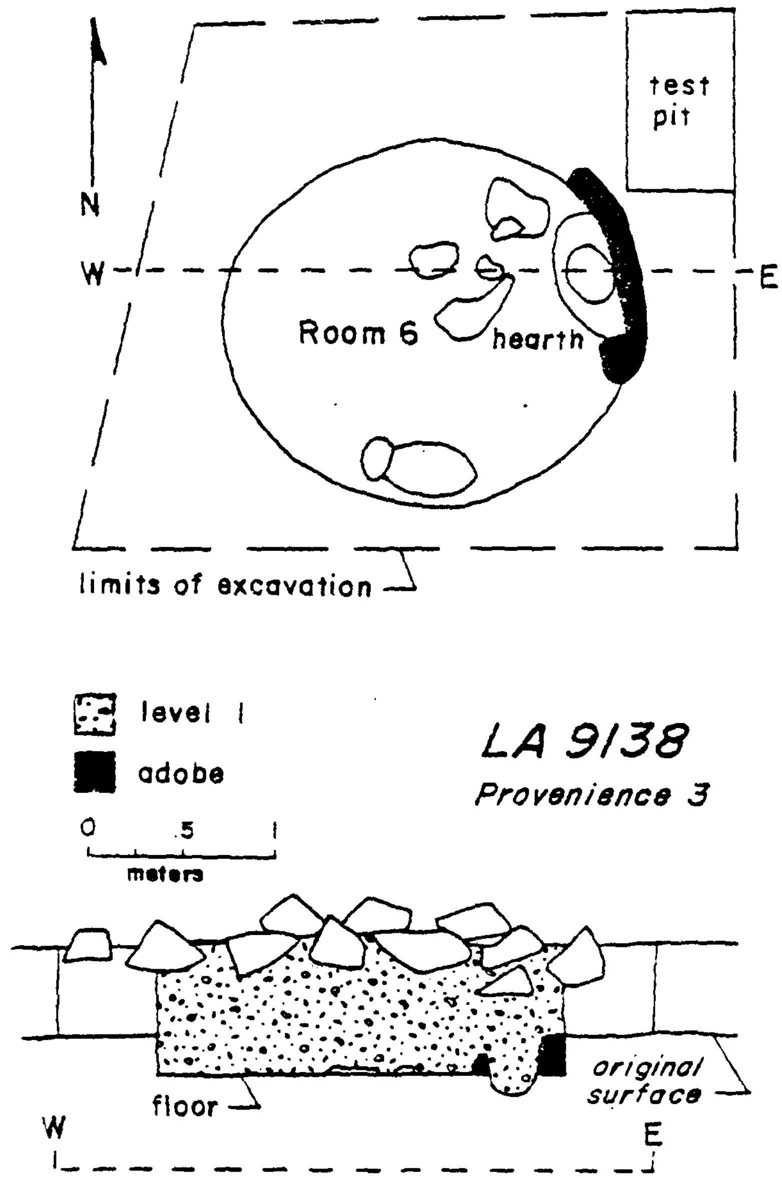


FIG. 9.2 LA 9138—Room 6, plan view and cross section

Walls: All four walls were similarly constructed.

Type of Elements: Local basalt slabs and clasts.

Size of Elements: The larger elements ranged in size from 45cm x 40cm to 20cm x 40cm. A few upper wall elements ranged in size from 15cm x 7cm to 30cm x 10cm.

Placement and Construction of Elements: Elements were horizontally laid in adobe mortar. The long axes of the elements corresponded to the long axes of the walls.

Shaping of Elements: Unmodified.

Wall Facing: The wall elements were placed so that the majority of their flat surfaces faced toward the interior of the structure.

Courses: The walls were one element wide and elements were overlapping and evenly coursed.

Chinking: River worn cobbles were used for chinking.

Corners: The south and west walls abutted at the southwest corner. All other corners were interlocking.

Plaster: No evidence of plaster was present.

Entrances: A doorway 50cm wide was found in the southeast corner of the room in the east wall. The original floor was excavated 24cm into the ground. A basalt clast 48cm x 28cm x 24cm was placed at floor level and formed a step up to the outside original ground surface. Approximately 24cm of fall accumulated between the first and second occupation. At this time the floor was constructed level with the original ground surface. A sill was then placed in the doorway on the floor, forming a small step the thickness of the slab sill (7cm).

Floors: Two floors were found in Room 7. The first occupation floor was constructed of hard packed adobe, 1.0cm to 1.5cm thick and approximately 95cm to 100cm below the present ground surface on the west wall. This floor was set into the ground surface. The second occupation floor was constructed between 70cm to 75cm below the ground surface on the west wall after a 24cm thick layer of fill accumulated on the first occupation floor. It was constructed of hard-packed adobe, also 1.0cm to 1.5cm thick.

Roofing: No evidence of roofing was found.

Interior Features:

Hearth: A hearth was found on the first occupation floor, 15cm north of the door, laid against the east wall. Two basalt slabs were laid vertically against the wall. An adobe rim enclosed a small circular stain of charcoal directly in front of the slabs. Interior hearth dimensions were 46cm x 30cm. No hearth was associated with the second occupation floor.

Room Fill: One cubic meter of rubble was removed from the interior of Room 7. Other fill consisted of a top layer of brown sandy soil. This was underlain by a coarse fill just 20cm above the first floor where a light sand was found (light in color and texture). Under the first floor was a brown sand with charcoal flecks and occasional wall fall, this layer was sterile. The wall fall below 75cm suggests remodeling during the second occupation of the room. Three to 4cm above the first occupation floor was the same type of light colored and textured fill as found on the second occupation floor. Sherds and lithics were found throughout the fill. A 40cm diameter concentration of lithics was lying on the first occupation floor in the southeast corner of the room. Early P-IV sherds were intermixed with later sherds in the upper fill, presumably as a function of erosion from Room 5 (a historic component room), located up slope from Room 7.

The fill in Room 7 was excavated in both natural strata and arbitrary levels:

Arbitrary		Natural	
level 1	0 to 20cm	level 7	0 to 23cm
level 2	20cm to 40cm	level 8	24cm to 50cm
level 3	40cm to 60cm	level 9	51cm to 55cm
level 4	0 to 65cm	level 10	55cm to 70cm
level 5	35cm to 75cm	level 11	70cm to 100cm
level 6	65cm to 75cm	level 12	100cm to 104cm

Levels 1 and 7 roughly correspond: levels 2, 3, 4, 5, 6, 8, 9 and 10 correspond to the second occupation: level 11 is associated with the first occupation.

Exterior Fill: A test trench was excavated extending 50cm from all walls to a depth of approximately 20cm to 45cm. No cultural materials were recovered.

Exterior Features:

Occupation Level: Evidence of an occupation surface was located 45cm below the second floor. It consisted of hard-packed dirt. No artifactual materials, however, were recovered from this surface.

Burial: In grid unit G9, a burial was found. A mound of basalt clasts was laid over the body. The individual was positioned face down, legs fully flexed, feet together, and forearms crossed in front of the neck. The skeleton was well preserved and fully articulated. It appeared that the individual was in its early twenties. The proximal clavical was not fused and the teeth were lightly worn. The size of the sciatic notch suggested that the individual was female. The teeth were normal with the exception of having had 4 incisors broken off at the root. Some grinding was apparent on two stubs of the lower incisors, suggesting that the teeth were broken prior to death. The molars were fully erupted.

The skull exhibited definite occipital flattening. The artifacts associated with the burial included a large sherd held between the right elbow and chest; several sherds of the same vessel were found in the stones piled over the body. The presence of P-IV ceramics in the burial indicate that the burial was contemporary with either the first or second occupation of Room 7. A large rock was located under the left side of the chest.

The burial, which had been encountered during invesitgation of the rubble mound which overlaid it, was documented *in situ*. The rubble was replaced after documentation.

Artifactual Assemblages

Lithic, ceramic and faunal materials were recovered from the prehistoric components of LA 9138. Ceramic artifacts from both rooms indicated occupations from the late 13th century into the 14th century (late P-III

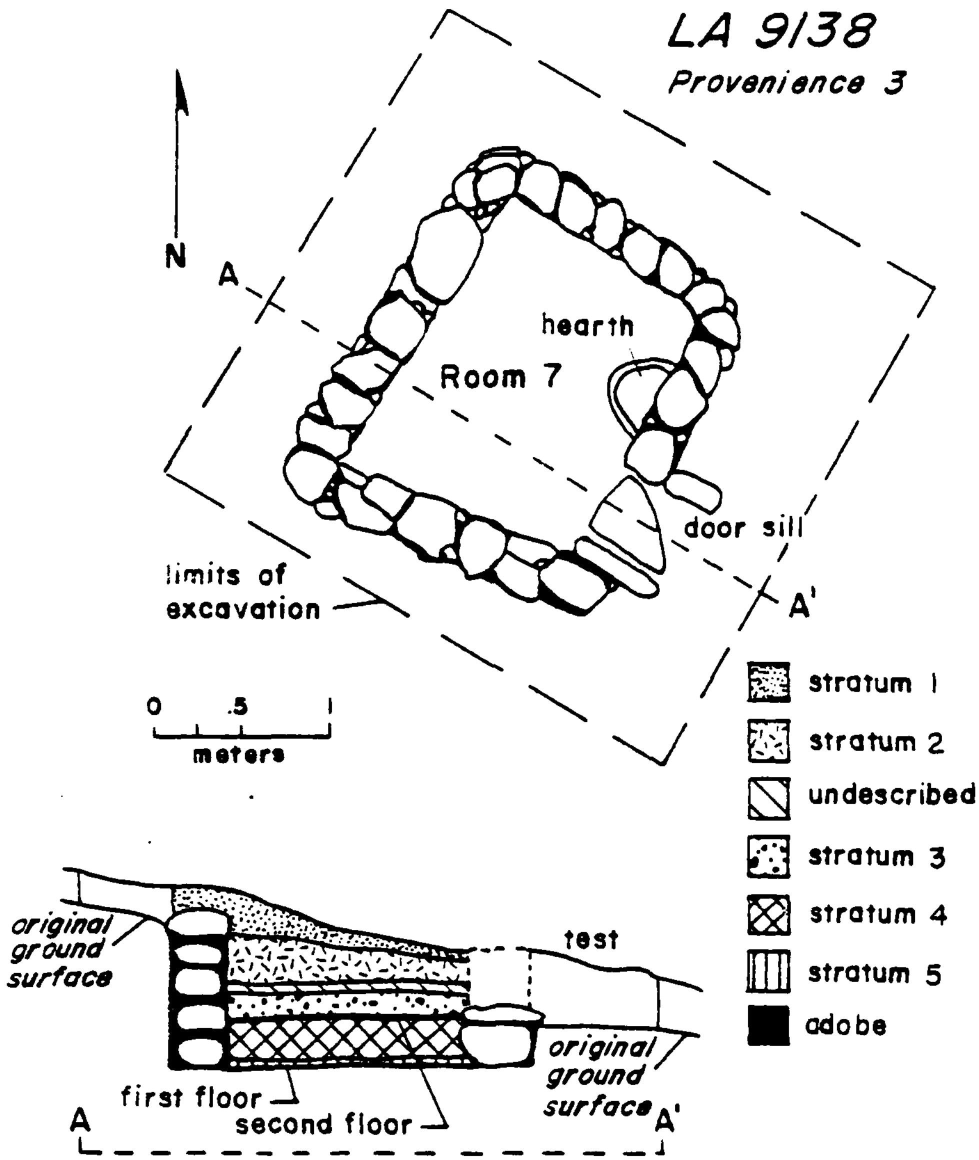


FIG. 9.3 LA 9138—Room 7, plan view and cross section

to early P-IV phases). Room 7 was reoccupied and ceramics from the second occupation date between the late 13th century and early 16th century.

Room 6, level 1 (fill above floor)

The fill above the floor in the room was collected as a single unit (1 to 40cm in depth). No artifacts were documented in direct contact with the floor.

Ceramic Artifacts

Thirteen sherds were recovered from the fill in Room 6. They represented a minimum of six vessels, although only three vessels are represented by more than one sherd. Three vessels are carbon painted bowls and three are utility ware jars. The temper types indicate manufacture from locally available materials. Although the size of the ceramic assemblage is low, the vessels present indicate manufacture during late P-III and possibly early P-IV phases of the Anasazi Period (ca. A.D. 1275-1325).

Lithic Artifacts

A total of 65 lithics was recovered from the fill in Room 6. Debitage (69.2%), small angular debris (12.3%) and large angular debris (12.3%) accounted for the largest portion of the assemblage. Additional artifacts included two cores, one chopper and one mano fragment.

1. Material Selection

Lithic artifacts were manufactured from chert (38.5%; 3 taxons); basalt (38.5%, 5 taxons), chalcedony (18.5%, 2 taxons), jasperoid (2 artifacts) and metarhyolite (1 artifact). All materials are locally available in the study area.

FIG. 9.4 Prehistoric rooms from LA 9138. Upper photograph is of Room 6 and the lower is of Room 7.

2. Manufacture

At least three material taxons (1051, 3700, 1215) are represented by sufficient amounts of cortical and non-cortical debris to suggest primary artifact manufacturing activities. Larger by-products of manufacture, two cores and nine pieces of large angular debris, were recovered as well. The majority of these artifacts were produced through freehand percussion detachment of debitage. One bipolar flake was noted indicating a different technique of reduction.

3. Tool Use

Only two artifacts were indicative of tool use. One piece of cortical debitage exhibited utilization in the form of unidirectional rounding. A single mano fragment may be indicative of milling activities.

Bone Artifacts

No bone artifacts were recovered from the fill in Room 6.

Faunal Materials

Two individuals are indicated in the four bone fragments recovered from the fill of Room 6. These included a black tailed jackrabbit (tibia and calcaneum) and a frog/toad/tree toad (tibia and fibula fragments).

Grid E6, level 0 (grid possibly associated with Room 6)

A 3m x 3m area outside Room 6 was excavated in an attempt to locate the exterior occupation surfaces. The only materials recovered during the course of this testing came from the surface of grid unit E6.

Ceramic Artifacts

Five sherds were recovered from portions of the surface of E6. Three were from a carbon polychrome olla and two from a polished corrugated P-IV jar. These ceramics provide no clear association with the prehistoric occupation (either Rooms 6 or 7) or with the historic occupation (Room 5).

Lithic Artifacts

A total of four lithics was recovered from grid E6. Three were debitage and one was a piece of small angular debris. Three different material taxons are represented: basalt (3700), and chert (1051 and 1090). Only two artifacts exhibited cortical surfaces, and none had been utilized.

Room 7, level 11 (fill above first floor)

Two floors were defined in Room 7, representing two distinct occupations of the room. The first, or lower floor, was situated 95cm to 100cm below surface, and

TABLE 9.1

LA 9138 PREHISTORIC COMPONENT—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	TEMPER	ROOM 6 LEVEL 1	GRID E6 LEVEL 0	ROOM 7 LEVELS 1-5, 7-9	ROOM 7 LEVEL 11	BURIAL	TOTAL
Painted Wares								
Santa Fe B/W	bowl	vitric tuff	1	—	—	1	3	5
	bowl	fine rhyolite	—	—	1	—	—	1
Galisteo(?)B/W	bowl	crystalline basalt & sherd	3	—	—	—	—	3
Wiyo B/W	bowl	shard, high quartz	1	—	—	—	—	1
Carbon/white (biscuit?)	bowl	vitric tuff	—	—	1	—	—	1
Glaze redware	bowl	basalt scoria	—	—	—	1	—	1
Cieneguilla G/Y	bowl	augite latite	—	—	—	—	1	1
Glaze/white	bowl	volcanic	—	—	1	—	—	1
Puaray G-P	bowl	rhyolite tuff	—	—	6	—	—	6
Carbon Polychrome	olla	vitric tuff	—	3	—	—	—	3
P-III Utility Wares								
Smeared Indented	jar	shard, quartz	5	—	2	7	—	14
Clapboard	jar	quartz	2	—	—	—	—	2
	jar	quartz mica schist	—	—	2	—	—	2
Blind Indented Corru.	jar	shard, quartz	—	—	1	—	—	1
P-IV Utility Wares								
Plain utility	jar	sand	1	—	—	—	—	1
	jar	mica	—	—	—	2	—	2
Blind Indented	jar	volcanic sandstone	—	—	2	1	—	3
Diagonal Smeared Ind.	jar	pumice	—	—	1	—	—	1
Corrugated (polished)	jar	pumice,quartz	—	2	—	—	—	2
	TOTAL		13	5	17	12	4	51

was covered with a 30cm thick layer of fill. This fill layer was designated as level 11. No artifacts were recovered in direct contact with the first floor.

Ceramic Artifacts

Twelve sherds from a minimum of five different vessels were recovered from the fill above the first floor. Two painted ware vessels, one Santa Fe B/W bowl and one glaze redware bowl, were represented by a single sherd each. Evidence of three utility ware jars, one P-III Smeared Indented (7 sherds), and one P-IV Plain utility (2 sherds) and one P-IV Blind Indented were recovered. The ceramics present were manufactured during late P-III to early P-IV phases of the Anasazi Period (between A.D. 1275-1400?).

Lithic Artifacts

A total of 310 lithics was recovered from the fill above the first floor. The majority of these was debitage (76.4%) and small angular debris (22.3%). Additional lithics included one core and three pieces of large angular debris.

1. Material Selection

A total of seven different material taxons was represented in this assemblage. The vast majority (73.5%) were manufactured from four different basalt taxons. Additional materials included chalcedony (25.8%, 2 taxons) and chert (0.3%, 1 taxon). All materials represented are available within the study area, and the majority are available within the immediate vicinity of the site location.

2. Manufacture

The amount of cortical and noncortical debitage and small angular debris for a minimum of three material taxons is sufficient to suggest primary decortication activities. These include basalts (3050 and 3700) and chalcedony (1215). Larger by-products of manufacture, either cores or large angular debris, occur for both of the above basalt taxons as well. The majority of lithic artifacts were produced through freehand percussion detachment of debitage. A single bipolar flake was recovered which indicates a different reduction technique from the rest of the assemblage.

3. Tool Use

Only three pieces of debitage (four edges) had been used as tools. This represents only 0.3% utilization for the assemblage as a whole.

Room 7, levels 1-10 (fill above second floor)

A second, upper floor was defined at a depth of 70cm to 75cm below the surface. The fill above this occupation was excavated in overlapping natural and arbitrary units which have been described previously. Levels 6 and

TABLE 9.2

LA 9138 PREHISTORIC COMPONENT–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 6, LEVEL 1													
Basalt:	3700	12	–	–	1	1	–	–	–	–	–	–	14
	3080	–	2	–	1	–	–	–	–	–	–	–	3
	3050	2	2	–	–	1	1	–	–	–	–	–	6
	3401	–	–	–	–	–	–	–	–	1	–	–	1
	3701	–	–	–	–	1	–	–	–	–	–	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	16	4	–	–	2	–	–	–	–	–	–	22
	1090	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony	1214	1	–	–	–	–	–	–	–	–	–	–	1
	1215	9	–	–	–	2	–	–	–	–	–	–	11
Quartzite, Jasp.:	1501	2	–	–	–	–	–	–	–	–	–	–	2
	1502	–	–	–	–	1	–	–	–	–	–	–	1
Room Totals		45	8	0	2	8	1	0	0	1	0	0	65
GRID E6, LEVEL 0													
Basalt:	3700	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1051	–	1	–	–	–	–	–	–	–	–	–	1
	1090	1	–	–	–	–	–	–	–	–	–	–	1
Grid Totals		3	1	0	0	0	0	0	0	0	0	0	4

TABLE 9.2 (con't)

LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 7, LEVELS 1–10													
Basalt:	3701	2	–	–	–	–	–	–	–	–	–	–	2
	3700	11	2	–	–	–	–	–	–	–	–	–	13
	3030	–	1	–	–	–	–	–	–	–	–	–	1
	3050	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	2	1	–	–	–	–	–	–	–	–	–	3
	1090	3	1	–	–	–	–	–	–	–	–	–	4
Chalcedony:	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	1	–	–	–	–	–	–	–	–	–	–	1
	1215	1	–	–	–	–	–	–	–	–	–	–	1
	1214	–	–	–	–	1	–	–	–	–	–	–	1
Room Totals		23	5	0	0	1	0	0	0	0	0	0	29
ROOM 7, LEVEL 11													
Basalt:	3701	2	1	–	–	–	–	–	–	–	–	–	3
	3700	36	12	–	–	2	–	–	–	–	–	–	50
	3030	3	6	–	–	–	–	–	–	–	–	–	9
	3050	140	24	–	1	1	–	–	–	–	–	–	166
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1214	1	–	–	–	–	–	–	–	–	–	–	1
	1215	54	26	–	–	–	–	–	–	–	–	–	80
Room Totals		237	69	0	1	3	0	0	0	0	0	0	310
BURIAL													
Obsidian:	3530	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1215	1	–	–	–	–	–	–	–	–	–	–	1
Burial Totals		2	0	0	0	0	0	0	0	0	0	0	2

10 (65cm to 75cm and 55cm to 70cm, respectively) directly overlay the floor. Neither lithics nor ceramics were recovered from either level.

Ceramic Artifacts

Seventeen ceramic fragments from a minimum of nine vessels were recovered from the fill above the second floor in Room 7. Both painted and utility wares were represented. The prehistoric painted wares included one Santa Fe B/W bowl (1 sherd), one untyped carbon-on-white biscuit-like bowl (1 sherd), one Puaray G-P bowl (6 sherds) and one glaze-on-white bowl (1 sherd). P-III utility wares included a Smeared Indented jar (2 sherds), two Blind Indented jars (1 sherd and 2 sherds each). P-IV utility wares consisted of one Blind Indented jar (2 sherds) and one Diagonal Smeared Indented jar (1 sherd). The dates in manufacture for these ceramics range from late P-III to intermediate P-IV, and postdate estimates for the time of manufacture for ceramics recovered from Room 6.

Lithic Artifacts

A total of 29 lithic artifacts was recovered from the fill above the second floor. The majority were debitage (79.3%) and small angular debris (17.2%); only one piece of large angular debris was collected. Four taxons of basalt were represented and made up 58.6% of the assemblage, followed by chert (27.6%, 3 taxons) and chalcedony (13.8%, 4 taxons). All taxons represented are available within the immediate vicinity of the site location. The frequencies of cortical and noncortical debris for at least one basalt taxon (3700) suggest by-products of limited manufacturing activities in the assemblage. All of the lithics were manufactured through a freehand percussion detachment of debitage technique. Three edges from one artifact and one edge from another exhibited

use. The three edges from the same artifact were straight in outline shape and exhibited unidirectional rounding. The other edge was concave in outline shape and exhibited both perpendicular step fracture and unidirectional rounding.

Bone Artifacts

No bone artifacts were recovered from the fill above the second floor.

Faunal Materials

A single skull fragment from a fish was recovered from level 4 in Room 7 (1 to 65cm).

Burial

Little artifactual debris, two pieces of debitage and four sherds, was monitored in association with the burial. One piece of debitage had been manufactured from chalcedony (1215) and one from obsidian (3530); neither exhibited use. Three of the four sherds were pieces of a Santa Fe B/W bowl; the other sherd was a large fragment of a Cieneguilla G/Y bowl. Because of the context of the Cieneguilla sherd, it is probable that the burial was associated with either P-IV occupation of Room 7. It is possible that the other ceramics may have been remnants of a trash area for an earlier P-III occupation.

HISTORIC OCCUPATION

The Historic Period occupation of LA 9138 consisted of seven structures, several trash scatters and possibly an extensive wall network which encloses the entire site location. Based upon the types of ceramic vessels present, all of the structures appear to date to the Spanish Colonial Phase between A.D. 1750 and 1800. Although the contemporaneity of the structures cannot be clearly established, at least two 18th century occupations are indicated in Proveniences 1 and 2 (Rooms 1-4).

PROVENIENCE 1

At least two occupations are indicated in Provenience 1, both of which can be dated ceramically to the middle or late 18th century. The first occupation of the provenience is represented by the construction and occupation of Room 1 as a habitation structure. The room was then abandoned and reused as a corral during the second occupation. There is evidence for a similar reuse of Rooms 3 and 4 in Provenience 2, 10 meters to the southeast of Room 1. It is probable that the occupation of Room 2 (Provenience 1), which lacks evidence of use as a corral, is either contemporaneous with the reuse of Rooms 1, 3 and 4 or postdates the reoccupation of these rooms.

Method of Excavation

A grid system of 2.0m x 2.0m squares was placed over Proveniences 1 and 2, which measured 22 meters north-south by 24 meters east-west. The base line ran 35 degrees east of true north or parallel to the long axis of the structures, and was one meter west of the structures. The structures were excavated in grids and arbitrary levels which encompassed natural strata, but all soil samples were taken from natural strata. In the laboratory all cultural material recovered from the room interiors was identified by room and level, rather than by grids within rooms. Surface collections were made and included in level 1 materials. Exterior grids excavated in Provenience 1 included: D6, E4, F1, F3, F4, F6, G3, and G4.

Architecture

Orientation of Structure:

The long axis of the two room structure was 35 degrees east of true north. The slope of the land was easterly.

Dimensions of Roomblock: 7.09m x 3.50m (24.82 square meters).

Description of Rooms:

Room 1:

Shape: Rectangular surface structure.

Orientation: The long axis is 35 degrees east of true north.

Condition: Room 1 did not appear to have been vandalized. Shrubs and grasses had grown over the rubble mound and wall fall was set into the ground.

Interior Room Dimensions:

	Length	Width	Height
North	2.64m	.35m	.60m
South	2.60m	.40m	.70m
East	4.60m	.40m	.53m
West	4.50m	.50m	.87m

Walls: All four walls were similar in construction.

Type of Elements: Local basalt slabs and clasts.

Size of Elements: Elements ranged in size from 15cm x 8cm to 35cm x 35cm. The smaller elements were few in number and were randomly scattered throughout the wall.

Placement and Construction of Elements: The wall elements were overlapping and laid horizontally with the long axes of the stone corresponding to the long axes of the walls. Adobe mortar was used.

Shaping of Elements: Unmodified.

Wall Facing: Facing was accomplished through placement of elements with flat surfaces to the interior of the room.

Courses: To accommodate varying element sizes the wall ranged from one to two elements wide. Vertical courses were not even, but were also laid to accommodate varying element size and shape into a structurally sound wall.

Chinking: Chinking consisted of river worn pebbles and small cobbles.

Corners: All four corners were interlocking.

Plaster: The interior walls were plastered with a 2cm to 3cm thick layer of adobe tempered with small pebbles. Exterior walls were not plastered.

Entrances: In a 57cm wide area of the east wall, several

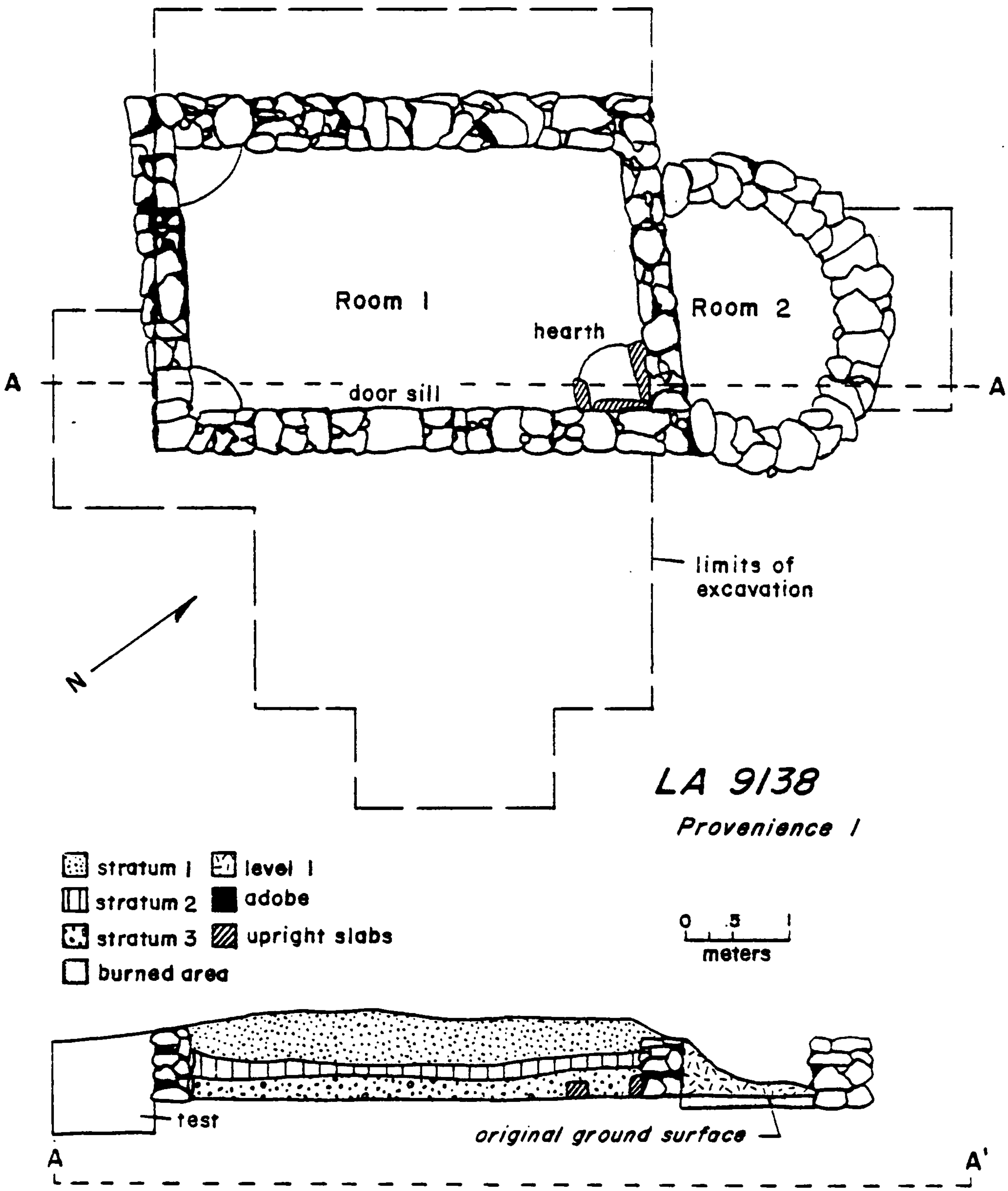


FIG. 9.5 LA 9138—Rooms 1 and 2, plan view and cross section

elements were lying at various angles with their long axes perpendicular to the long axis of the wall, suggesting a probable entrance filled with wall fall. A large, horizontally laid basalt clast underlaid two layers of these stones. The sill of this possible entrance was situated 35cm above floor level.

Floors: The floor was well defined, hard packed adobe, 1.0cm to 1.5cm thick. The floor sloped slightly from east to west. The western portion of the floor was excavated into the slope of the ground surface.

Roofing: No evidence of roofing was recovered.

Interior Features:

Hearth: A slab and adobe lined hearth was situated at floor level in the northeast corner. A large basalt slab was set vertically against the east wall. A large adobe brick was set vertically against the north wall. The south edge of the hearth was a 14cm thick slab set vertically and abutting the east wall. Interior dimensions were 56cm x 45cm, with a height of 25cm. No cultural material was associated with this feature.

Burned Areas: Two burned areas were found in the southeast and southwest corners in the fill 20cm above the floor. The area in the southeast corner was 40cm x 40cm, and the one in the southwest corner was 60cm x 50cm. No firecracked rocks or artifacts were associated with these features. However, there were several burned pinyon nuts found in the southwest corner.

Room Fill: The room fill was composed of a top layer of sandy loam (level 1), which was underlain by a layer of organic rust colored fill or decomposed manure (level 2). This second stratum, which averaged 10cm in thickness, was situated between 20cm and 30cm above the floor. Two burned areas were found in this layer. Small pieces of wood were found in level 1 and level 2. The second stratum indicates a later occupation with the reuse of Room 1 as a corral. This may be contemporary with the construction of Room 2. The third layer (level 3) was a coarse sand and gravel fill which extended to 1.0cm to 1.5cm above the floor. A thin layer of fine sand rested on the adobe floor (level 4). Levels 3 and 4 appear to represent a Spanish Colonial occupation. Excavations along the wall areas exposed patches of adobe mortar at all levels. Sherds, lithics, bone and charcoal were found throughout the fill.

Rubble: A total of 7.82 cubic meters of interior and exterior rubble were recorded for Room 1. The total volume of the existing walls was 4.69 cubic meters. By calculating the volume on the existing wall height and volume of the rubble, it was possible to estimate that the original wall height of this room was no more than 2.02m above the floor level. This structure represents a one story masonry building.

Exterior Fill: Along the west, south and one meter of the east walls, the fill was composed of coarse sand mixed with pebbles and river worn cobbles to a depth of at least one meter. Along four meters of the east wall, the fill was sandy loam. Cultural material included bone, lithics and sherds. This material was collected by grid in a single level (level 1, 0 to 80cm).

Exterior Features:

Occupation Level: The original occupation surface at a depth of 53cm below the top of the east wall was uncovered outside the east wall of Room 1. There was a piece of wood and a proliferation of sherds, lithics and bone found on this packed surface. These artifacts were collected as a single unit (level 1). The occupation surface was not located elsewhere.

Room 2:

Shape: "D" shaped surface structure abutting Room 1.

Orientation: Not possible to define due to shape.

Condition: Room 2 did not appear to have been vandalized.

Interior Room Dimensions:

	Length	Width	Height
North	2.00m	.55m	.70m
South	1.80m	.35m	.60m
East	1.19m	.45m	.50 to .60m
West	1.30m	.42m	.65m

Walls: The east, west and north walls were similar in construction. The south wall is described as the north wall of Room 1. Any differences are noted below.

Type of Elements: Local basalt boulders.

Size of Elements: Elements were more rounded or boulder shaped, ranging in size from 35cm x 20cm to 50cm x 25cm. Very few clasts or slabs were present.

Placement and Construction of Elements: The wall elements were overlapping and horizontally stacked. Some of the elements were globular in shape and set at varying angles. The elements were laid without adobe mortar.

Shaping of Elements: Unmodified.

Wall Facing: Walls were not faced.

Courses: The walls were between one and two elements wide; placement was not patterned.

Chinking: No chinking was present.

Corners: The northeast and northwest corners were round and interlocking while the southeast and southwest corners were abutted to the north wall of Room 1.

Plaster: No plaster was present.

Entrance: No evidence for an entryway was recovered.

Floors: The floor was a poorly defined, hard-packed dirt surface exhibiting an ash patina over one-half of the room. In the southwest and northeast corners the floor was hard and burned. The floor was slightly sloping and 10cm lower than in Room 1.

Roofing: No evidence of roofing was recovered.

Interior Features: No interior features were present.

Room Fill: The fill was shallow, ranging from 20cm to

FIG. 9.6 LA 9138 -Provenience 1 roomblock. Room 1 is in background and Room 2 in foreground.

50cm of brown loamy soil. Below this was a thin charcoal lens. 2cm to 3cm thick. Eight sherds from a single vessel were found in the northeast corner of the room. Other cultural material recovered from this room included bone, lithics, a shotgun shell and additional ceramics. The cultural material above the floor was collected as a single unit (level 1). A test pit was excavated below floor level and artifacts recovered from this test were collected as level 2.

Rubble: A total of .73 cubic meters of interior and exterior rubble was measured from Room 2. This does not represent a significant increase in height of the existing walls.

Exterior Fill: Exterior fill consisted of mixed sand and pebbles similar to fill in D6 and D8 and was collected by grid as a single unit (level 1).

Exterior Features: Due to the poorly defined floor, the association of this room to the exterior occupation surface of Room 1 is unknown.

Artifactual Assemblages

Artifactual materials were recovered from all four levels in Room 1, two levels in Room 2 and eight grid units outside the rooms.

Room 1, level 1

Lithics, ceramics, bone, floral and metal materials were recovered from the surface and upper 20cm to 50cm of fill in Room 1 (level 1).

Ceramic Artifacts

Thirty-seven sherds from a minimum of six vessels were recovered from level 1 in Room 1. These represented 72.5% of the total number of sherds recovered from the room as a whole. The vessels included one Ogapoge Polychrome bowl (7 sherds), one Puname Polychrome olla with a red matte surface (12 sherds), one Puname red-on-white olla (4 sherds), one Plain Black Polished olla (1 sherd), one Plain Red Polished hemispherical bowl (4 sherds), and one utility ware jar (9 sherds). With the exception of the utility ware jar, the tempering materials of all the vessels suggest local manufacture during the middle to late 18th century.

Lithic Artifacts

A total of 17 lithic artifacts was recovered from the upper level of Room 1. Twelve were pieces of debitage; three were cores, and two were pieces of small angular debris. Eleven artifacts were manufactured from chalcedony (89%, 2 taxons); one was manufactured from obsidian, and the one was manufactured from quartzite. Two of the cores and 10 pieces of debitage were manufactured from a single chalcedony taxon (1053) and may represent by products of primary manufacturing activi-

ties. The majority of debitage appears to have been produced through a freehand detachment technique, although two of the cores exhibited evidence of bipolar reduction. None of the artifacts had been used as tools.

Bone Artifacts

No bone artifacts were recovered from Room 1, level 1.

Historic Artifacts

Four iron fragments of unknown purpose and age were recovered from the upper fill in Room 1.

Faunal Materials

Twelve bone fragments representing as many as eight individuals were recovered. These included an Artiodactyla individual, a large mammal, a medium-large mammal, a mammal, a large duck, a cottontail rabbit, a wood rat and a pocket mouse. Long bone, rib and skull fragments were recovered.

Floral Materials

Remains of 10 roasted pinyon nut shells were recovered.

TABLE 9.3

LA 9138 PROVENIENCE 1—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	VITRIC TUFF (Nambe)	VITRIC TUFF (N. Rio Grande)	PUMICE	LOCAL BASALT	VITROPHYRE	ANDESITE	SANDSTONE	TOTAL
Room 1, level 1									
Ogapoge Polychrome	bowl	–	7	–	–	–	–	–	7
Puname Polychrome	olla	–	–	–	12	–	–	–	12
Puname "red/white"	olla	–	–	–	4	–	–	–	4
Redware (polished)	hemis. bowl	–	–	4	–	–	–	–	4
Blackware (polished)	olla	1	–	–	–	–	–	–	1
Plainware (pol. interior)	jar	–	–	–	–	–	–	9	9
Room 1, level 2									
Puname Polychrome	olla	–	–	–	8	–	–	–	8
Puname "red/white"	olla	–	–	–	5	–	–	–	5
Room 1, levels 3,4									
Blackware (polished)	bowl	–	–	1	–	–	–	–	1
	Total—Room 1	1	7	5	29	0	0	9	51
Room 2, level 1									
Puname "red/white"	olla	–	–	–	7	–	–	–	7
Plainware (red scored)	olla	–	–	–	–	–	–	11	11
Room 2, level 2									
Puname Polychrome	olla	–	–	–	12	–	–	–	12
Unid. glaze-polychrome	bowl	–	–	–	–	–	1	–	1
	Total—Room 2	0	0	0	19	0	1	11	31
Grids									
Ogapoge Polychrome	jar	–	7	–	–	–	–	–	7
Carbon Polychrome	olla	–	4	–	–	1	–	–	5
Puname Polychrome	jar	–	–	25	40	–	–	–	65
	olla	–	–	36	45	–	–	–	81
Red/buff	olla	–	–	2	1	–	–	–	3
Red/white	olla	–	–	1	–	–	–	–	1
Redware (polished)	n.d.	1	–	–	–	–	–	–	1
Blackware (polished)	jar	–	20	–	–	–	–	–	20
	olla	8	–	–	–	–	–	–	8
Plainware (pink/white)	olla	–	–	4	–	–	–	–	4
Plainware (polished)	jar	–	–	–	–	1	–	4	5
Plainware (unpolished)	jar	–	–	–	–	–	–	2	2
Plainware (undifferentiated)	comal	–	–	–	–	–	–	1	1
	Total—Grids	9	31	68	86	2	0	7	203

Room 1, level 2

Level 2 consisted of a 10cm layer of organic rust-colored fill, which appeared to be decomposed manure, and leads to an interpretation that Room 1 was reused as a corral. Similar levels were recovered from Rooms 3 and 4 in Provenience 2. Few artifacts were recovered from this level.

Ceramic Artifacts

Fourteen sherds from a minimum of three different vessels were recovered from this level. One was a Puname Polychrome olla (8 sherds); another was a Puname red-on-white olla (5 sherds); and the third was a prehistoric glaze redware bowl (1 sherd). Sherds from the Puname vessel may represent two of the same pots found in level 1.

Lithic Artifacts

Three pieces of debitage, each manufactured from a different material taxon, were recovered from level 2. Two edges from one of the flakes exhibited use.

Bone Artifacts

No bone artifacts were recovered from level 2.

Historic Artifacts

No metal or glass items were recovered from level 2.

Faunal Materials

One axis fragment from an Artiodactyla individual was recovered.

Room 1, levels 3, 4

Levels 3 and 4 directly overlay the adobe floor in Room 1. These were thin strata totaling 1.0cm to 1.5cm in depth. Although no materials were documented in direct contact with the floor, materials recovered from these two strata should be associated with the occupation of the room.

Ceramic Artifacts

A single sherd from a Plain Black polished bowl was recovered from the fill which directly overlay the floor. It was tempered with pumice which suggests local manufacture. No other fragments from this bowl were recovered from the other levels in the room, although sherds recovered from grids F1 and F3 may be portions of the same vessel.

Lithic Artifacts

A total of 37 lithic artifacts was recovered from the fill which directly overlay the floor. Debitage represented 78.9% of the total assemblage. Other artifacts included five pieces of small angular debris (13.1%), one core, one chopper and one piece of large angular debris.

1. Material Selection

Lithic artifacts were predominantly manufactured from chalcedony (47.4%, 5 taxons), chert (31.6%, 3 taxons), and obsidian (15.8%, 2 taxons). In addition, a single piece of basalt and a single piece of silicified wood were recovered. The majority of these materials are locally available in the study area.

2. Manufacture

Although the frequencies of debitage and small angular debris which exhibit cortical surfaces are high, the total number of artifacts is too low to be indicative of routine primary reduction ativities. Two larger byproducts of manufacture, one core (1053) and one piece of large angular debris (1230), however, were present.

3. Tool Use

One chopper was recovered which exhibited utilization on two edges. One edge had been battered and the other exhibited nonbattering use. Seven pieces of debitage had been utilized. Three were chalcedony (4 edges), three were obsidian (4 edges), and one was chert (1 edge). The utilized debitage reflected a diversity in edge outline shape and character of utilization. All but one edge exhibited perpendicular step fracture.

Bone Artifacts

One piece of bone was selected for utilization. It was a Class 4 tool with a highly polished outer surface which is bordered by green breaks. The function of this type of tool is presently unknown.

Historic Artifacts

No metal or glass artifacts were recovered from either levels 3 or 4.

Faunal Material

Two pieces of bone, one rib fragment from a medium-large mammal and one skull fragment from a large mammal, were recovered from level 3. Twenty-three bones were collected from level 4. These included long bone, rib, vertebrae and skull fragments from the following individuals: *Ovis* spp./*Capra* spp., Artiodactyla, medium-large mammal, large mammal, cottontail rabbit and a woodrat.

Room 2, level 1

The 20cm to 50cm fill above the floor in Room 2 was collected as a single unit. Fragments of a single vessel were recovered from the floor in the northeast corner of the room. Additional ceramic, lithic, bone and metal materials were recovered from the fill above the floor.

Ceramic Artifacts

Eighteen sherds from two different vessels were recovered from the fill in Room 2. One vessel, a small, heavily scored utility jar, was recovered in direct contact with the floor. The other vessel, a Puname red-on-white olla, represented by seven sherds, was found in the fill above the floor. Both vessels were tempered with crystaline basalt and crushed sherd, and indicate local manufacture.

Lithic Artifacts

Only two pieces of debitage were recovered from the upper fill in Room 2. One was manufactured from basalt and the other from chalcedony. Neither piece exhibited evidence of use.

Bone Artifacts

One utilized fish rib, the only Class 1b tool recovered from LA 9138, was collected from the upper fill in Room 2. The tip of the implement was rounded; polish and striations extended down its shaft and may indicate use as a needle. Although the tool does not have an eye, the proximal end of the rib, with its articular surface, provides a natural hook. It is possible that the fish rib was selected for use because of its edge morphology. Falk (1969:40) has identified a fish rib with similar wear patterns, lacking an eye, as a bone needle on the "Two House Site" in the Central Plains.

Historic Artifacts

One shotgun shell, current U.S. boxes primer, which postdates 1920 in manufacture (Barnes 1972), was recovered from the upper fill in Room 2.

Faunal Materials

Five bones, all rib fragments, were recovered from the upper fill in Room 2. Four different individuals were represented: one Artiodactyla; one medium-large mammal; one large mammal, and one fish.

TABLE 9.4

LA 9138 PROVENIENCE 1–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, LEVEL 1													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1053	7	–	–	3	1	–	–	–	–	–	–	11
	1215	2	1	–	–	–	–	–	–	–	–	–	3
Quartzite, Jasp.:	4000	–	1	–	–	–	–	–	–	–	–	–	1
Room Totals:		10	2	0	3	1	0	0	0	0	0	0	16
ROOM 1, LEVEL 2													
Basalt:	3701	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	–	–	1	–	–	–	–	–	–	–	–	1
Chalcedony:	1215	1	–	–	–	–	–	–	–	–	–	–	1
Room Totals:		2	0	1	0	0	0	0	0	0	0	0	3
ROOM 1, LEVELS 3, 4													
Obsidian	3520	4	–	–	–	–	–	–	–	–	–	–	4
	3525	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3030	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1050	6	3	–	–	–	–	–	–	–	–	–	9
	1051	1	–	–	–	–	1	–	–	–	–	–	2
	1090	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1053	8	1	–	–	1	–	–	–	–	–	–	10
	1091	3	–	–	1	–	–	–	–	–	–	–	4
	1230	1	–	–	–	–	–	–	–	–	–	–	1
	1340	1	1	–	–	–	–	–	–	–	–	–	2
Silicified Wood:	1113	1	–	–	–	–	–	–	–	–	–	–	1
Room Totals:		29	5	0	1	1	1	0	0	0	0	0	37

TABLE 9.4 (con't)

LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 2, LEVEL 1													
Chalcedony:	1215	1	–	–	–	–	–	–	–	–	–	–	1
Room Totals:		1	0	0	0	0	0	0	0	0	0	0	1
PROVENIENCE 1 EXTERIOR GRIDS													
Basalt:	3701	4	–	–	–	–	–	–	–	–	–	–	4
	3700	1	–	–	–	–	–	–	–	–	–	–	1
	3030	1	–	–	–	–	–	–	–	–	–	–	1
	3050	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	2	–	–	–	1	–	–	–	–	–	–	3
	1090	–	1	–	–	1	–	–	–	–	–	–	2
Chalcedony:	1053	–	1	–	–	1	–	–	–	–	–	–	2
	1214	–	1	–	–	–	–	–	–	–	–	–	1
	1215	5	2	–	–	–	–	–	–	–	–	–	7
	1340	1	1	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	1501	3	–	–	–	–	–	–	–	–	–	–	3
Provenience Totals:		18	6	0	0	3	0	0	0	0	0	0	27

Room 2, level 2

A test pit was excavated below the floor in Room 2. This test yielded 13 sherds from two vessels. One was a Puname Polychrome olla with red matte exterior surface. It was represented by twelve sherds. An untyped glaze polychrome sherd, possibly from a San Clemente G-P bowl, which would date to the late 14th century, was recovered as well. No additional artifacts were recovered from this subfloor test.

Exterior Grids

Ceramic Artifacts

Surface collection and excavation within grid units in the vicinity of Rooms 1 and 2 resulted in the recovery of 203 ceramic artifacts from a minimum of 21 vessels. Three vessels were represented by sherds recovered within Room 1 and only eight of the vessels were represented by five or more sherds. Vessel forms included ollas (11), jars (8) and a single comal fragment. One sherd which could not be identified as to vessel form was recovered as well. All of the vessels were manufactured during the Spanish Colonial phase of the Historic Period and all tempering materials employed derived from source areas in the Cochiti study area.

Lithic Artifacts

Twenty-seven lithic artifacts were recovered through excavation and collection of grid units outside Room 1 and 2. The majority of these were pieces of debitage (20 artifacts), although three pieces of small angular two pieces of large angular debris and a core were found as well. The artifacts were manufactured from chalcedony (17 artifacts, 6 taxons), chert (5 artifacts, 2 taxons), basalt (1 artifact, 1 taxon), quartzite (1 artifact, 1 taxon) and silicified wood (1 artifact, 1 taxon). All materials represented are available within the immediate vicinity of the site location. The limited number of items recovered does not indicate that tool manufacturing activities were routinely performed outside the room structures. Three pieces of chalcedony debitage exhibited unretouched edges characterized by wear patterns indicative of sawing utilization.

Bone Artifacts

No bone artifacts were recovered from the grids in Provenience 1.

Historic Artifacts

No historic glass or metal items were found.

Faunal Materials

Four skeletal fragments were recovered through excavation of exterior grids in Provenience 1. These included a radius from a domestic sheep or goat (*Ovis* spp. or *Capra* spp.), a vertebra and rib fragment from a medium to large mammal and a skull fragment from a large mammal.

PROVENIENCE 2

Provenience 2 is a single roomblock comprised of two rooms, Rooms 3 and 4. The roomblock was constructed during the Spanish Colonial phase. A possible reoccupation, contemporary with the reoccupation of Provenience 1, was indicated in the room fill. This provenience was located four meters northeast of Provenience 1 and had the same vegetative structure and physiographic setting.

Method of Excavation

A single grid pattern of two meter squares was placed over Provenience 2 as in Provenience 1. The method of excavation was the same as described in Provenience 1.

Exterior grids excavated in association with Provenience 2 included: K7, L7, O7, N4, N7 and P6. This provenience was excavated in arbitrary levels that encompassed four natural strata. All soil samples were taken from natural strata.

Architecture

Orientation of Structure:

The long axis of the two room structure was 35 degrees east of true north. The slope of the land was easterly.

Dimensions of Roomblock: 8.30m x 3.97m (32.95 square meters)

Description of Rooms:

Although Rooms 3 and 4 are discussed separately below, it was constructed as a single structure with a later added east-west dividing wall. A number of similarities are noted in the descriptions of each room.

Room 3:

Shape: Rectangular surface structure.

Orientation: The long axis was 35 degrees east of true north.

Condition: Room 3 was intact and did not appear to have been vandalized.

Interior Room Dimensions:

	Length	Width	Height
North	3.97m	.37m to .42m	.60m
South	3.77m	.50m to .57m	.50m
East	5.00m	.50m to .63m	.30m
West	4.84m	.37m to .63m	.55m

Walls: The east, west and south walls were similar in construction. They are described below. The north wall will be discussed separately.

Type of Elements: Local basalt slabs and clasts.

Size of Elements: Elements ranged in size from 42cm x 31cm to 18cm x 10cm.

Placement and Construction of Elements: Elements were overlapping and laid horizontally with their long axes corresponding to the long axis of the structure. Adobe mortar was used.

Shaping of Elements: Unmodified.

Wall Facing: Placement was such that the interior and exterior wall surfaces were flat.

Courses: The wall elements were laid flat and irregularly placed from one to three elements wide.

Chinking: The walls were chinked with river worn pebbles and cobbles.

Corners: The southeast and southwest corners were interlocking. The east and west walls were abutted by the north room dividing wall forming the northeast and northwest corners of Room 3.

Plaster: The interior walls were plastered with adobe, 3cm to 5cm thick; there was no exterior plastering. No observable difference was noted between the mortar and the plaster.

North Wall: The north wall of Room 3 served as a dividing wall between Room 3 to the south and Room 4 to the north. This wall was built upon the floor and abutted the east and west walls. It appears to have been constructed at the same time as the other walls.

Type of Elements: Local basalt boulders, clasts and adobe bricks.

Size of Elements: The basalt elements ranged in size from 39cm x 21cm to 44cm x 25cm. The adobe bricks ranged in size from 33cm x 32cm x 7cm to 35cm x 31cm x 8cm.

Placement and Construction of Elements: The basal elements were large unshaped basalt clasts. These were overlain by horizontally laid adobe bricks. The wall mortar was adobe but a different kind than that used in brick manufacture. It was lighter in color and more gritty in texture.

Shape of Elements: The basal elements were unmodified.

Wall Facing: Placement of adobe and basalt elements

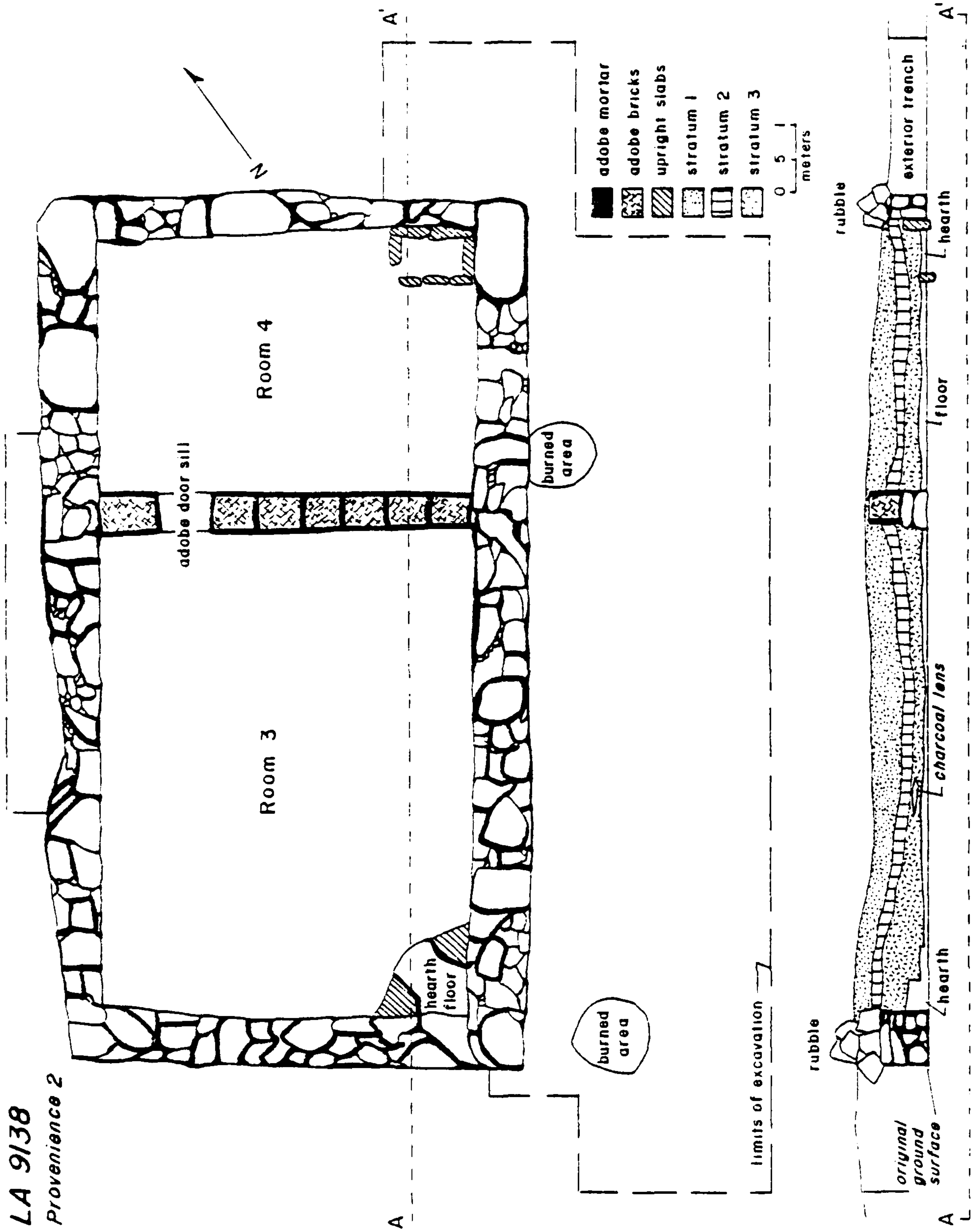


FIG. 9.7 LA 9138—Rooms 3 and 4. plan view and cross section

was such that flat surfaces faced both exterior and interior wall faces.

Courses: The lower elements of basalt were two courses high. These elements were overlain by adobe bricks laid horizontally four courses high.

Chinking: No chinking was present.

Corners: The wall dividing the two rooms abutted the east and west walls of the roomblock.

Plaster: No plaster was evident.

Entrances: An interior doorway was uncovered in the wall between Rooms 3 and 4. The doorway was 56cm east of the west wall; it was 58cm wide and 2.68m from the east wall. The door sill was 21cm above the floor. The threshold was adobe, 4cm to 8cm thick. Room 3 had no exterior doorway.

Floors: The floor was flat and well defined. It was hard-packed adobe averaging 1.0cm in thickness. After the dividing wall between the two rooms was removed it was determined that the wall was added after the floor was built. The floor was constructed on a naturally flat portion of the ground.

Roofing: No evidence of roofing material was found.

Interior Features:

Hearth: An adobe hearth was found in the southeast corner of Room 3. It was made of adobe bricks measuring 33cm x 7cm. The bricks extended from the south and east walls forming a hearth with its opening diagonal to the southeast corner. Two bricks were still in their original positions; three others had fallen into the firebox. The lip of the oven rose 9cm above the floor, at this level the opening to the firebox measured 32cm wide and 50cm deep. No artifactual material was associated with this feature. A burned peach pit was found in the oven.

Room Fill: Four distinct natural strata were noted. Stratum 1, between 10cm and 32cm in thickness, was a sandy loam fill with small pebbles scattered throughout; stratum 2 was an organic rust colored fill or a decomposed manure layer approximately 10cm thick corresponding to stratum 2 in Room 1 and probably representing the same occupation. Use of Room 3 as a corral during this occupation is implied. The third stratum, between 10cm and 38cm in thickness, was composed of medium-grained sand and gravel. A small lens of charcoal 5cm thick and 30cm in diameter was found near the northeast corner. A thin lens of fine sand extended above the floor (stratum 4). Cultural material recovered from Room 3 included lithics, sherds, bone and wood. Burned wood was found in level 2 and a piece of unburned wood from level 1. Materials collected from level 1 correspond to stratum 1; materials from level 2 correspond to stratum 2; materials from level 3 correspond to strata 3 and 4.

Rubble: The rubble was not divided by room. Provenience 2 interior and exterior rubble totaled 2.08 cubic meters. The total volume of the existing walls was 7.0 to 8.4 cubic meters. Through conversion of existing individual wall mass to height, it was determined that the volume of rubble removed from the fill, if added to the walls, would extend the height no more than 13cm. This indicates that the original structure was one story.

Exterior Fill: A test trench was excavated against a portion of the west wall (M7 and N7). The fill appeared to be alluvial wash, containing many pebbles and cobbles. A second test trench was placed outside the east wall and excavated to the exterior occupation surface at 40cm.

Exterior Features:

Occupation Level: The west wall test trench uncovered the original occupation surface. This surface was found just below the basal elements of the west wall. The occupation surface was on top of a sand and gravel lens. The original ground surface along the east wall was located at a depth of 40cm.

Burned Areas: On the occupation surface near the east wall, at a depth of 40cm, two circular fire blackened areas, 70cm in diameter, were uncovered. They were surficial and contained several carbonized peach pits. Lithics and pottery fragments were found associated with these fragments. All of the material was collected as a single unit (level 1).

Room 4:

Shape: Rectangular surface structure.

Orientation: The long axis was 35 degrees east of true north.

Condition: Same as Room 3.

Interior Room Dimensions:

	Length	Width	Height
North	3.95m	.25m to .37m	.40m
South	3.97m	.27m to .42m	.60m
East	2.80m	.50m to .58m	.40m
West	2.60m	.58m to .63m	.80m

Walls: The north, east and west walls are similar to the construction of the south, east and west walls of Room 3. Any differences are listed below, where appropriate.

Type of Elements: Same as Room 3.

Size of Elements: Elements range in size from 42cm x 31cm to 18cm x 10cm. There are four very large wall elements in the northeast and northwest corners of Room 4 (1.04m x .60m x .45m; .63m x .94m x .45m), in the center of the north wall (.89m x .80m x .36m) and in the center of the east wall (.90m x .60m x .38m).

Placement and Construction of Elements: Same as Room 3.

Shaping of Elements: Same as Room 3.

Wall Facing: Same as Room 3.

Courses: Same as Room 3.

Chinking: Same as Room 3.

Corners: The northeast and northwest corners were

abutted. The east and west walls were abutted by the south wall of Room 4, which divided the structure into two rooms.

Plaster: Same as Room 3.

Walls: The dividing wall between Room 3 and 4, or the south wall of Room 4, has been described as the north wall of Room 3.

Entrances: No exterior entrances were found in Room 4. A description of the interior doorway can be found in the Room 3 description.

Floors: Same as Room 3.

Roofing: Same as Room 3.

Interior Features:

Hearth: In the northeast corner of Room 4 a hearth was found. There were three vertically laid basalt slabs. Two slabs were placed against the north wall (39cm x 24cm x 7cm; 43cm x 28cm x 8cm), and another on the east wall (38cm x 38cm x 7cm). At floor level four slabs rose above the floor about 7cm; they measured, on the south, 23cm x 8cm; 23cm x 8cm; 20cm x 8cm; and one on the west side, 27cm x 9cm. The interior hearth dimensions were 68cm east-west x 40cm north-south. No cultural material was associated with this feature.

Room Fill: Same as Room 3.

Rubble: Rubble from Room 3 and 4 noted in Room 3 descriptions.

Exterior Fill: Same as Room 3.

Exterior Features: Same as Room 3.

Artifactual Assemblages

At least two occupations are indicated in Provenience 2. The ceramic artifacts place both occupations in the middle to late 18th century. The first occupation is represented by the construction and use of Rooms 3 and 4 as habitation structures. Rooms 3 and 4 represent a single structure with a dividing wall.

The second occupation is represented by a 10cm thick organic stratum within the fill of both rooms which indicates their reuse as corrals. This latter occupation seems to correspond with the second occupation of Room 1 and is probably contemporaneous. It is possible that the first occupations of Rooms 1, 3 and 4 may also be contemporaneous.

Room 3, level 1

Level 1 was a 10cm to 30cm sandy loam lens intermixed with small pebbles. Lithics, ceramics, floral and faunal materials were recovered.

Ceramic Artifacts

A total of 18 sherds representing a minimum of six different vessels was recovered from the uppermost fill in Room 3. These vessels included one Ogapoge Polychrome olla (1 sherd); one Ogapoge bowl (2 sherds); one Red Polished hemispherical bowl (1 sherd), one utility jar with a polished interior (10 sherds), one utility corrugated gray jar (1 sherd), one utility red scored olla (1 sherd), and prehistoric glaze red bowl (2 sherds). These sherds reflect local manufacture and date to the middle to late 18th century.

Lithic Artifacts

A total of 18 lithic artifacts was recovered from level 1. Ten were pieces of debitage; seven were pieces of small angular debris and one was a piece of large angular debris. These artifacts were manufactured from eight different material taxons. Most were chalcedony (50%, 4 taxons) and chert (28%, 3 taxons), while the remaining artifacts were manufactured from two different taxons of basalt. Only one edge was selected for use.

Bone Artifacts

One highly modified tool was carved from an unknown element of a medium-large mammal. Polish appears on all but the broken surface of the tool, suggesting use as a needle. Another bone tool exhibited a highly polished exterior surface which was bordered by green breaks. It was a Class 4 tool and its function is not known at present.

Historic Artifacts

No metal or glass items were recovered from level 1.

Faunal Materials

Nine bone fragments were recovered. These represented an *Ovis* spp./*Capra* spp. individual, an Artiodactyla, a medium mammal, a medium-large mammal and a large mammal. Two of the fragments were from young individuals.

Room 3, level 2

Level 2 consisted of a 10cm layer of organic rust-colored fill which may represent decomposed manure. Similar strata were recorded for Rooms 1 and 4. This level provides evidence that Room 3 was reused as a corral.

Ceramic Artifacts

Six sherds from three different vessels were recovered from level 2. Five sherds represented a Puname Polychrome olla; the remaining sherd was from a utility ware jar.

Lithic Artifacts

Twelve lithic artifacts were recovered from level 2. These included debitage (10 artifacts) and small angular debris (2 artifacts). They were manufactured from five different material taxons; the majority were produced from a single taxon of chalcedony. One artifact exhibited use.

Bone Artifacts

No bone artifacts were recovered from level 2.

Historic Artifacts

No metal or glass items were recovered from Room 3, level 2.

Faunal Materials

One rib fragment from a medium-large mammal was

recovered from level 2 in Room 3.

Flotation Sample

A 1.0 liter sample of the presumed manure layer was subjected to flotation analysis, which resulted in identification of 212 seeds.

No.	Species	Comment
10	*Chenopodium*	This is an annual forb known as goosefoot or lambsquarters. It is thought to be succulent and tasty when young and less so in the mature seed producing stage.
95	*Amaranthus*	*Amaranthus* is a weedy annual forb similar to *Chenopodium* in growth habit, distribution and food use, both human and animal.
6	*Chenopodium Amaranthus*	See above.
55	*Portulaca*	*Portulaca* (purslane or pursley) is a low-growing succulent plant. It is palatable to man and animal even when mature (in seed).
2	*Physalis*	There are frequent references to the food use of *Physalis*. Fruits of this plant (each containing multiple seeds) were eaten raw or mashed with other foods and cooked.
13	Achenes	These were of a type which resembled *Bahia*, but there are so many genera in this family with similar seed forms that it is difficult to assigne them to a specific genus. These tiny seeds have no recorded human use.
30	misc.	The remaining seeds could not be categorized although most belonged to one type. Also present in the sample were many small feces, probably indicating rodent activity.

Discussion: This sample gave the highest over-all density of seeds, with 212 per liter sampled. There is some question whether this relatively high density of seeds may be associated with historic use of the dwelling as a sheep shelter, rather than with any prehistoric occupation. Sheep grazing in Southwestern semi-arid desert areas are most likely to eat *Artemsia* (sagebrush), various grasses depending on availability, *Atriplex* (saltbush), and a variety of forbs (including *Amaranthus, Astragalus, Salsola,* etc.). When sheep consume seeds, they are passed through whole. Some of the seeds found in this sample showed a surface encrustation that may be intestinal detritus. In other words they may be present in this location as a result of passing through the intestinal tract of sheep or other animals. Note that the most common form of seed dispersal by sheep has been due to their carrying seeds and fruits in their fleeces. Such seeds would likely be hooked or barbed, and none of the seeds found in the sample were hooked or barbed.

Room 3, levels 3, 4

Levels 3 and 4 represent 10cm to 38cm of fill which directly overlay the floor in Room 3.

Ceramic Artifacts

Three sherds representing two different vessels were recovered from the fill which directly overlay the floor. These included one Puname Polychrome olla (2 sherds) and the other a plainware utility jar with a polished interior (1 sherd). Tempering materials from these vessels suggest local manufacture in the 18th century.

Lithic Artifacts

A total of four lithic artifacts was recovered from the fill which directly overlay the floor. All were debitage. Two material taxons were represented: one basalt (3700), and one chalcedony (1215). Three artifacts exhibited cortical surfaces, and none had been used as tools.

Bone Artifacts

No bone artifacts were recovered from levels 3 and 4.

Historic Artifacts

Neither metal nor glass items were recovered from Room 3, levels 3 and 4.

Faunal Materials

Three bone fragments were recovered from level 3. They represented an Artiodactyla and a large mammal. Two were rib fragments and the other was a complete incisor.

Flora Material

A burned peach pit was recovered from the hearth in Room 3.

Room 4, level 1

Artifactual materials recovered from the upper 10cm to 30cm of fill in Room 4 included lithics, ceramics and bone.

Ceramic Artifacts

A total of twelve sherds representing four different vessels was recovered from level 1 in Room 4. Six of the sherds were from a Puname Polychrome olla; two plainware vessels were represented by four sherds; and two represented a prehistoric glaze redware bowl. These ceramics were similar to those recovered from the other rooms in Proveniences 1 and 2 and were manufactured during the middle to late 18th century.

Lithic Artifacts

Twenty-five lithic artifacts were recovered from level 1 in Room 4. The majority were debitage (72%), one of which was a bipolar flake. Six pieces of small angular debris and one piece of large angular debris were recovered as well. An additional possible artifact was a basalt stream pebble which exhibited three scars on one lateral edge. Twelve different material taxons are represented, including chalcedony (46%, 4 taxons), chert (29%, 4 taxons), and basalt (25%, 4 taxons). Two artifacts were selected for use, one of which exhibited three utilized edges.

Bone Artifacts

TABLE 9.5

LA 9138 PROVENIENCE 2—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	VITRIC TUFF (Nambe area)	VITRIC TUFF (N. Rio Grande)	VESICULAR BASALT (local)	CRYSTALLINE BASALT (Local)	VITROPHYRE (Local)	VITROPHYRE (Pajarito Plateau)	SANDSTONE	TOTAL
Room 3, level 1									
Ogapoge Polychrome	olla	–	1	–	–	–	–	–	1
	bowl	2	–	–	–	–	–	–	2
Plainware (red scored)	olla	–	–	–	–	–	–	1	1
Plainware (red, polished)	hemis. bowl	–	–	–	1	–	–	–	1
Plainware (pol. interior)	jar	–	–	–	–	–	–	10	10
Unid. glaze/red	bowl	–	–	2	–	–	–	–	2
Corrugated Indented (gray)	jar	–	–	–	–	–	–	1	1
Room 3, level 2									
Puname Polychrome	olla	–	–	5	–	–	–	–	5
Plainware (pol. interior)	jar	–	–	–	–	1	–	–	1
Room 3, levels 3,4									
Puname Polychrome	olla	–	–	2	–	–	–	–	2
Plainware (pol. interior)	jar	–	–	–	–	–	–	1	1
	Total—Room 3	2	1	9	1	1	0	13	27
Room 4, level 1									
Puname Polychrome	olla	–	–	6	–	–	–	–	6
Plainware (red scored)	olla	–	–	–	–	–	–	2	2
Plainware (pol. interior)	jar	–	–	–	–	–	–	2	2
Unid. glaze/red	bowl	–	–	2	–	–	–	–	2
Room 4, level 2									
Puname Polychrome	olla	–	–	4	–	–	–	–	4
Red/white(glaze?)	bowl	–	–	–	–	–	1	–	1
Room 4, levels 3,4									
Ogapoge Polychrome	olla	–	2	–	–	–	–	–	2
Puname Polychrome	olla	–	–	2	–	–	–	–	2
Plainware (pol. interior)	jar	–	–	–	–	–	–	3	3
Cieneguilla G/Y	bowl	–	–	–	–	–	1	–	1
	Total—Room 4	0	2	14	0	0	2	7	25
Grids									
Puname Polychrome	olla	–	–	6	–	–	–	–	6
	jar	–	–	6	–	–	–	–	6
Redware (Puname?)	olla	–	–	1	–	–	–	–	1
Redware (polished)	olla	–	–	–	1	–	–	–	1
Plainware (pol. interior)	jar	–	–	–	–	–	–	4	4
San Clemente G-P	bowl	–	–	1	–	–	–	–	1
	Total—Grids	0	0	14	1	0	0	4	19

TABLE 9.6

LA 9138 PROVENIENCE 2–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 3, LEVELS 1, 2													
Basalt:	3701	2	–	–	–	–	–	–	–	–	–	–	2
	3050	1	1	–	–	–	–	–	–	–	–	–	2
Chert:	1051	2	–	–	–	–	–	–	–	–	–	–	2
	1090	2	–	–	–	–	–	–	–	–	–	–	1
	1401	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1213	–	–	1	–	–	–	–	–	–	–	–	1
	1214	1	–	1	–	–	–	–	–	–	–	–	2
	1215	12	1	–	–	–	–	–	–	–	–	–	13
	1091	3	–	–	–	–	–	–	–	–	–	–	3
	1310	–	–	–	–	1	–	–	–	–	–	–	1
	1340	–	1	–	–	–	–	–	–	–	–	–	1
ROOM 3, LEVELS 3, 4													
Basalt:	3701	2	–	–	–	–	–	–	–	–	–	–	2
Chaldecony:	1215	2	–	–	–	–	–	–	–	–	–	–	2
Room Totals:		26	3	2	0	1	0	0	0	0	0	0	34
ROOM 4, LEVELS 1, 2													
Basalt:	3701	4	–	–	–	–	–	–	–	–	–	–	4
	3700	1	–	–	–	–	–	–	–	–	–	–	1
	3030	1	–	–	–	–	–	–	–	–	–	–	1
	3050	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	2	–	–	–	–	–	–	–	–	–	–	2
	1090	1	1	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1053	1	1	–	–	–	–	–	–	–	–	–	2
	1214	–	1	–	–	–	–	–	–	–	–	–	1
	1215	7	2	–	–	–	–	–	–	–	–	–	9
	1340	1	1	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	1501	3	–	–	–	–	–	–	–	–	–	–	3
ROOM 4, LEVELS 3, 4													
Basalt:	3700	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	3	–	–	–	–	–	–	–	–	–	–	3
	1090	2	1	–	–	–	–	–	–	–	–	–	3
	1400	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1214	3	1	–	–	–	–	–	–	–	–	–	4
	1215	9	–	–	–	–	–	–	–	–	–	–	9
Silicified Wood:	1100	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite:	4000	–	1	–	–	–	–	–	–	–	–	–	1
Sandstone:	2200	–	–	–	–	–	–	–	–	1	–	–	1
Room Totals:		43	9	0	0	0	0	0	0	1	0	0	53
EXTERIOR GRIDS													
Chert:	1050	2	–	–	–	–	–	–	–	–	–	–	2
	1051	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1215	3	–	–	–	–	–	–	–	–	–	–	3
	1340	–	1	–	–	–	–	–	–	–	–	–	1
Grid Totals:		6	1	0	0	0	0	0	0	0	0	0	7

No bone artifacts were recovered from level 1 in Room 4.

Historic Artifacts

No metal or glass items were recovered.

Faunal Materials

A single long bone shaft fragment from a large mammal was recovered.

Room 4, level 2

Level 2 consisted of a 10cm thick layer of decomposed manure, similar to strata recovered from Rooms 1 and 3. This level provides evidence that Room 4 was reused as a corral.

Ceramic Artifacts

Five sherds representing two different vessels were recovered from level 2 in Room 4. Four sherds were from a Puname Polychrome olla and one sherd was from an untyped prehistoric red-on-white bowl. The Puname vessel was of local manufacture and dates to the middle to late 18th century.

Lithic Artifacts

Four lithic artifacts were recovered from level 2, all of which were debitage. Three were manufactured from chalcedony (2 taxons) and one from chert. One exhibited a cortical surface, and none had been utilized as tools.

Bone Artifacts

No bone artifacts were recovered from level 2.

Historic Artifacts

No metal or glass items were recovered from level 2 in Room 4.

Faunal Materials

Four bone fragments were recovered from level 2. Two were portions of an *Ovis* spp./*Capra* spp. individual. The others represented a distal humerus fragment of a large mammal and an innominate fragment of an Abert's squirrel.

Room 4, levels 3, 4

Levels 3 and 4 represent the 10cm to 38cm fill which directly overlay the floor.

Ceramic Artifacts

Eight sherds were recovered from levels 3 and 4. They represented four different vessels: one Ogapoge Polychrome olla (2 sherds); one Puname Polychrome olla (2); one utility jar with a polished interior (3 sherds); and one prehistoric Cieneguilla G/Y bowl (1 sherd). The historic ceramics are of local manufacture and date to the middle to late 18th century.

Lithic Artifacts

A total of 25 lithic artifacts was recovered from the fill which directly overlay the floor. The majority were debitage (84%). Additional artifacts included one two-hand mano and three pieces of small angular debris.

1. Material Selection

The majority of lithics were manufactured from chalcedony (52%, 2 taxons) and chert (32%, 3 taxons). Other materials included one taxon each of basalt, silicified wood, quartzite and sandstone. Source areas for many of these material taxons are available in the immediate vicinity of the site location.

2. Manufacture

With the possible exception of one chalcedony taxon (1215), the frequencies of debitage and small angular debris are too low to suggest routine performance of primary manufacturing activities. The percentages of cortical surfaces are, however, high for all materials.

3. Tool Use

Five pieces of debitage, or 20% of the total lithic assemblage, exhibited utilization. All of the utilized debitage were manufactured from chalcedony. Four exhibited diagonal step fracture and nibbling which may be indicative of sawing activities. Milling activities may be indicated by the presence of a two-hand mano.

Bone Artifacts

A single Class 4 tool was recovered from the fill which directly overlay the floor in Room 4. It exhibited a highly polished outer surface which was bordered by green breaks. Its function has not been determined.

Historic Artifacts

No metal or glass artifacts were recovered from levels 3 or 4 in Room 4.

Faunal Materials

Eight bone fragments were recovered from level 3. These included several small rodents, a cottontail rabbit, a song bird, an Artiodactyla and a large mammal.

Exterior Grids in Provenience 2

Proveniences 1 and 2 share a 22m x 24m grid system. Fifteen units within this grid system were excavated; six are associated with Provenience 2. These include K7, L7, O7, N4, N7 and P6. Little surficial material was recovered from these grid units.

Ceramic Artifacts

A total of 19 sherds which represent six different vessels was recovered from the grids in Provenience 2. These include two Puname Polychrome vessels, one jar and one olla, with a red matte surface. Each of these vessels exhibited six sherds. Other vessels included a Puname Plain Red olla (1 sherd), Plain Red Polished olla (1 sherd), a utility jar with a polished interior (1 sherd) and a San Clemente Glaze Polychrome bowl (1 sherd). The Puname vessels are of local manufacture and date to the middle to late 18th century.

Lithic Artifacts

Only seven lithics were recovered in the grids near

Rooms 3 and 4, including six pieces of debitage and one piece of small angular debris. Four artifacts were chalcedony (1215, 1340) and three were chert (1050, 1051). These materials are locally available. Three artifacts exhibited cortical surfaces, and the piece of small angular debris exhibited a single utilized edge.

Bone Artifacts

No bone artifacts were recovered from the grids in Provenience 2.

Historic Artifacts

No metal or glass items were recovered from the grids in Provenience 2.

Faunal Materials

Three bones, two from grid P6 and one from L7 were recovered. These represented an *Ovis* spp./*Capra* spp. individual, a fish and a woodrat. The fish is one of two fragments recovered from the historic component of LA 9138.

Flora

A burned peach fragment was recovered from grid K7.

PROVENIENCE 3

Provenience 3 is a multicomponent locale comprised of three isolated structures, Rooms 5, 6 and 7. Room 5 is a rectangular structure of Spanish Colonial construction. Rooms 6 and 7 and an associated burial represent a P-IV occupation and have been discussed previously, are described with the other Anasazi structural site reports. Provenience 3 was located on a gravel bench 50 meters west of the Rio Grande River. The bench was dissected by arroyos 5 meters north and 5 meters south of Room 5. The bench was covered with grama grasses, rabbitbrush and occasional junipers. Thick stands of juniper and cholla covered the alluvial flats below the bench.

Method of Excavation

The provenience was horizontally stratified into 2m by 2m grid squares. The base line of this grid system was oriented north-south. A total of 110 grid units (440 square meters) were surface collected. Four grid units (16 square meters) were excavated to a depth of 30cm, and all rooms were totally excavated. Grid units were excavated in arbitrary levels but all soil samples were taken from natural strata. All room interior cultural material was identified by room and arbitrary level, not by grid. One exterior grid (E2) was excavated in Provenience 3 associated with Room 5.

Architecture

Room 5:

Shape: Rectangular surface structure.

Orientation: The long axis of Room 5 was 20 degrees east of true north. The slope of the land was easterly.

Condition: Room 5 was badly eroded.

Interior Room Dimensions:

	Length	Width	Height
North	3.15m	.40m to .45m	.77m
South	2.90m	.32m to .35m	.55m
East	4.80m	.32m to .60m	.40m
West	4.80m	.30m to .40m	.50m to 1.0m

Walls: All four walls were constructed in a similar manner.

Type of Elements: Local basalt slabs.

Size of Elements: The basal elements ranged in size from 23cm x 27cm to 41cm x 20cm. Overlying smaller elements ranged in size from 17cm x 7cm to 35cm x 10cm.

Placement and Construction of Elements: The basal elements were large and overlain by smaller slabs. The elements were overlapping and laid horizontally with their long axes corresponding to the long axes of the walls. All basal elements of the walls were situated at the same horizontal level. Wall elements were laid in adobe mortar.

Shaping of Elements: Unmodified.

Wall Facing: Facing was accomplished through placement of elements with their flat surfaces toward the interior of the room.

Courses: The walls were between one and two elements wide and were overlapping and laid horizontally.

Chinking: Small pebbles and cobbles were used for chinking.

Corners: All four corners were interlocking.

Plaster: No plaster was present.

Entrances: The east wall appears to have fallen out of the structure as a single unit. Near the center of this collapsed rubble, approximately two meters north in the east wall, was the outline of a possible above floor entrance. An estimate of the above floor measurement, from the rubble fall was approximately 30cm. A basalt slab 75cm in length was found framing the south face of the entrance. This may indicate door height.

Floors: No clear evidence for a floor was found. Two trenches were excavated below the basal elements of the walls to a depth of 20cm. Fill in these test pits was coarse with large pebbles scattered throughout. The structure was apparently built directly on the existing ground surface and was not excavated into the slope of the ground.

Roofing: No evidence of roofing was recovered.

Interior Features: No features were found associated with Room 5.

Room Fill: The interior fill was made up on one stratum which was comprised of sand and small pebbles reaching from the surface to the base of the foundation elements

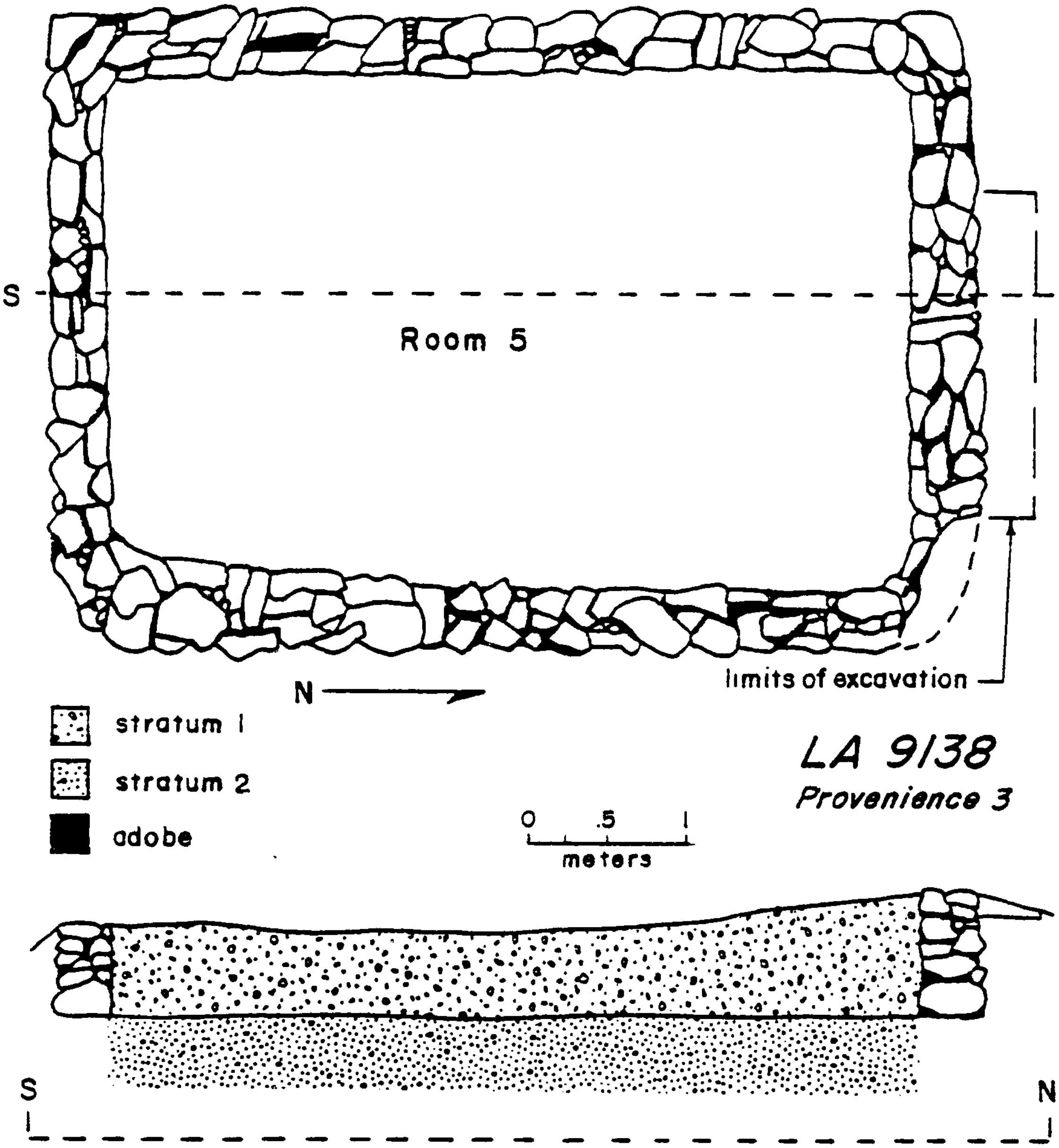


FIG. 9.8 LA 9138—Room 5, plan view and cross section

of the structure. A second lower stratum was found below the foundation stones of the room. Sherds and lithics were found throughout the upper stratum and were collected as a single unit (level 1).

Rubble: The wall rubble from Room 5 was not stacked or measured because of lack of time. Field estimates suggested that wall rubble would not increase the standing height of existing walls if added to them.

Exterior Fill: Grid E2, associated with the west wall of Room 5, was excavated 10cm below the surface. Lithics and sherds were recovered.

Exterior Features: No exterior features were evident.

Artifactual Assemblages

Little cultural material was recovered from the historic component of Provenience 3. The largest quantity of material was retrieved from the fill of Room 5. Although 110 grid units in the provenience were surface collected, historic materials were recovered from only three grids – B5, E2 and E6.

Room 5, levels 0, 1

The fill above the floor in the room was collected as a single unit, 0 to 75cm in depth. No artifacts were recovered in direct contact with the floor.

Ceramic Artifacts

A total of 23 sherds from a minimum of two vessels, one prehistoric and one historic was recovered from the fill in Room 5. Nineteen of the sherds were from the historic vessel, a Puname Polychrome olla. This vessel had a crystaline basalt temper which indicates manufacture either locally or at San Felipe, which lies to the south of Cochiti Reservoir. The remaining four sherds were from a Cieneguilla G/Y bowl. A sherd from a similar vessel (same type, form and temper) was recovered from the prehistoric component of Provenience 3.

TABLE 9.7

LA 9138 PROVENIENCE 3—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE, TEMPER & FORM		ROOM 5	E2, level 1	B5, level 0	TOTALS
OGAPOGE POLYCHROME Vitric tuff	olla	–	1	–	1
CARBON/CREAM Vitric tuff	olla	–	4	–	4
PUNAME POLYCHROME Crystalline basalt	olla	19	–	6	25
GLAZE/WHITE Red-gray scoria	bowl	–	1	–	1
CIENEGUILLA G/Y Augite latite	bowl	4	–	–	4
TOTALS		23	6	6	35

Lithic Artifacts

A total of six lithic artifacts was recovered from the fill, all were debitage. Three were manufactured from a chalcedony taxon (1215); one from chert (1090); one from basalt (3701); and one from obsidian (3530). Only two flakes exhibited cortex. Two edges of the obsidian artifact exhibited use.

Grid E2, level 1

One of the grid units adjacent to Room 5, grid E2, was excavated to a depth of 10cm. Few lithics or ceramics were recovered from this test.

Ceramic Artifacts

A total of six sherds from a minimum of three vessels was recovered from grid E2. Four sherds were from an untyped carbon-on-cream olla with vitric tuff temper. The remaining sherds were from an Ogapoge Polychrome olla (1 sherd) with vitric tuff temper and a glaze-on-white bowl (1 sherd) with scoria temper.

Lithic Artifacts

Three lithic artifacts were recovered from grid E2. One was a piece of debitage and the others were pieces of small angular debris. All three have been manufactured from a single taxon of chalcedony (1215), and two exhibited cortical surfaces. None had been used as tools.

TABLE 9.8

LA 9138 PROVENIENCE 3—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 5, LEVELS 0, 1													
Obsidian:	3530	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1090	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1215	3	–	–	–	–	–	–	–	–	–	–	3
Room Totals:		6	0	0	0	0	0	0	0	0	0	0	6
GRID B5, LEVEL 0													
Basalt:	3050	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
Grid Totals:		2	0	0	0	0	0	0	0	0	0	0	2
GRID E2, LEVEL 1													
Chalcedony:	1215	1	2	–	–	–	–	–	–	–	–	–	3

Grid E6, level 0

Because of its proximity to Room 6, a prehistoric Anasazi structure to the east of Room 5, the materials retrieved from the surface of the grid were described with the prehistoric components of LA 9138. Five sherds and four lithic artifacts were recovered from the grid. Three of the sherds represented an untyped historic carbon polychrome olla. The four lithic artifacts consisted of unutilized debitage and small angular debris.

Grid B5, level 0

Six sherds and two pieces of debitage were collected from the surface of grid B5. All of the sherds were from a Puname Polychrome olla with crystaline basalt temper. One of the lithic artifacts had been manufactured from a taxon of chert (1051) and the other from basalt (3050). One exhibited cortex and neither had been used as tools.

PROVENIENCE 4

Provenience 4 is a single roomblock comprised of two rooms, Room 8 and Room 9. Room 9 was built against the north wall and below Room 8. Both rooms represented a Spanish Colonial Occupation. Provenience 4 was located 8 meters southeast of Provenience 3, Room 5, on a gravel bench 50 meters west of the river. An arroyo ran north of Room 7. To the south of the provenience the ground sloped uphill and leveled into a meadow-like environment. Vegetation included grama grasses, rabbitbrush, junipers and a few pinyon pine. The alluvial flat of the provenience was covered with large stands of cholla and juniper. Overall rubble dimensions of the structure prior to excavation were 8m east-west by 9m north-south.

Excavation

A grid system of one by one meter squares was placed over the provenience. The base line of the grid was oriented north-south, and the system encompassed a total of 187 square meters. All grid units were surface collected. The interior of both rooms and grid units along the exterior of the south and west walls of the structure were excavated. Excavated grids associated with Room s8 and 9 included D2, D3, and F5. Due to the homogeneous nature of the interior room fill in Room 8 cultural material was recovered in two natural strata, above floor (level 1), and below the floor (level 2). All cultural material found in Room 9 was recovered in one natural strata (above floor).

Architecture

Orientation of Structure:

The long axis was 12 degrees west of true north. The ground surface exhibited an easterly slope.

Dimensions of Roomblock: 7.02m x 8.00m (56.16 square meters).

Description of Rooms: Room 8 was constructed on a knoll located above and contiguous to Room 9.

Room 8:

Shape: Oval surface structure.

Orientation: The long axis of the room was 12 degrees west of true north.

Condition: Some of the wall elements had been removed but little damage was done to the structure. Grasses and a small pinyon pine were growing in the room fill.

Interior Room Dimensions:

	Length	Width	Height
North	2.80m	.90m	.57m to .78m
South	2.80m	.55m to .47m	.90m to .97m
East	4.00m	.45m to .50m	.68m to .90m
West	4.00m	.80m	.61m to .90m

Walls: Minimal variation in wall construction existed. All walls are described together below. Any differences are noted.

Type of Elements: Local basalt slabs and clasts.

Size of Elements: The south, east and west walls exhibited basal elements ranging in size from30cm x 4cm to 41cm x 58cm. Upper elements ranged in size from 15cm x 8cm to 62cm x 41cm. The north wall was constructed entirely from larger clasts.

Placement and Construction of Elements: Elements were laid horizontally with their long axes corresponding to the long axis of the wall. The elements were laid in adobe mortar.

Shape of Elements: Unmodified.

Wall Facing: Placement was such that flat surfaces of the elements faced the interior.

Courses: The north and west walls were two elements wide, constructed on a foundation which was three elements wide (the walls were tiered). The south wall no longer had a third foundation course but may have previously. The east wall was only two elements wide. All vertical courses were evenly laid.

Chinking: Small cobbles were used for chinking.

Corners: There were no corners due to the ovoid shape of the structure.

Plaster: The interior walls were plastered with 1.0cm to 1.5cm thick layer of adobe.

Entrances: A floor level entranceway was located in the northeast corner. The sill, a large basalt clast measured 31cm x 35cm and was located at floor level. On the south face of the doorway was a single vertically-laid clast 2cm x 42cm x 7cm. The north face was a large basalt boulder 28cm x 40cm x 60cm. The door was 52cm at its widest point. Outside the room there was a step 20cm high from the sill to a larger basalt slab. From this slab there was a 49cm step to ground surface.

Floors: The floor was constructed of hard-packed adobe laid directly on the original ground surface. In some areas the floor was poorly preserved. The Room 8 floor was 1.17cm above the floor in Room 9.

Roofing: No evidence of roofing was present.

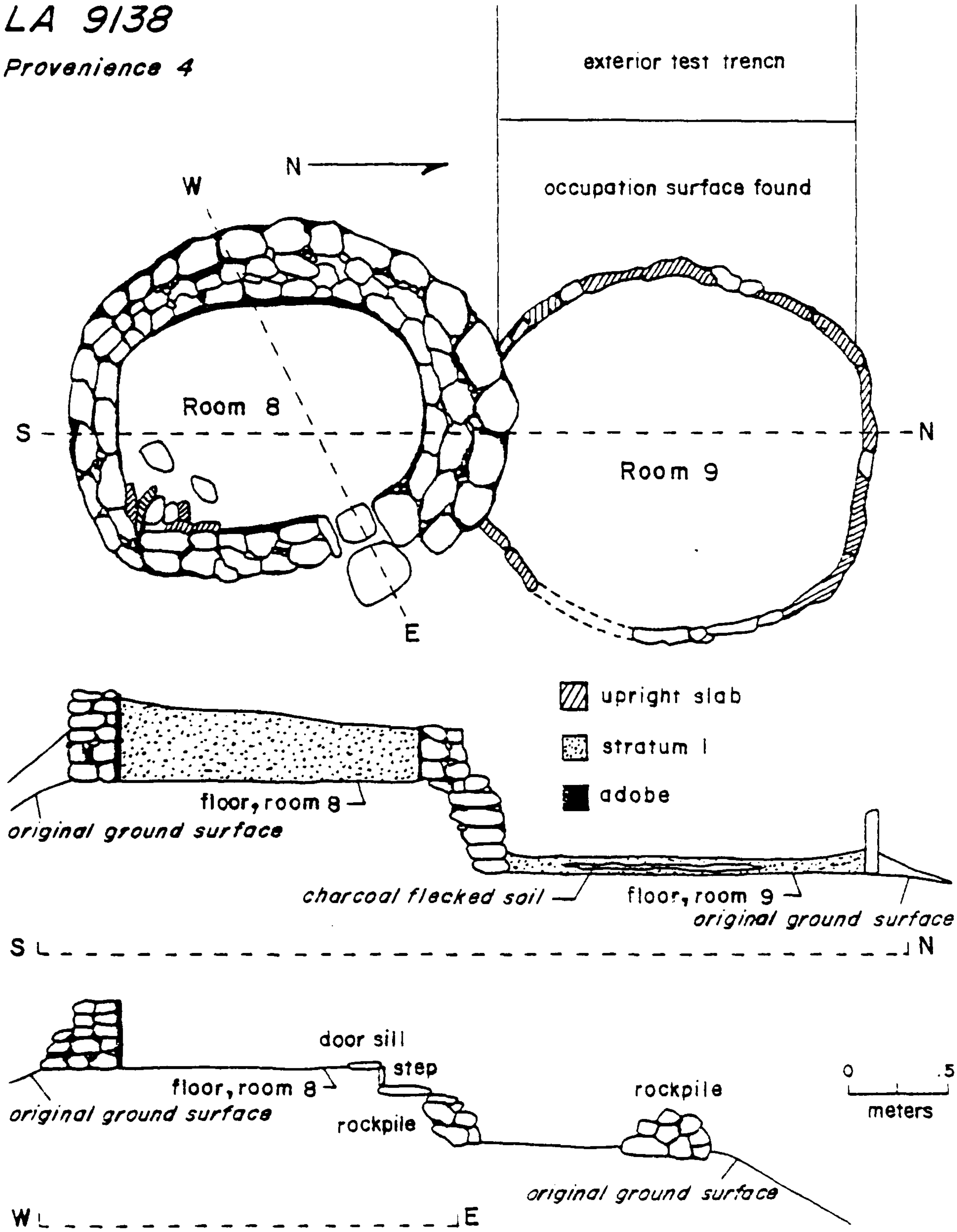


FIG. 9.9 LA 9138—Rooms 8 and 9, plan view and cross sections

Interior Features:

Hearths: A hearth that underwent remodeling was located in the southeast corner of the room. The original hearth was constructed of two slabs that formed a rectangle 85cm x 48cm at floor level along the south wall. Seven small flat stones were laid on the floor within the rectangle. These were reused in the later remodeling of the hearth. An additional two upright slabs formed the west and a single upright slab formed the north perimeter of the hearth. A burnt ash layer was deposited on the flat bottom hearth elements. In remodeling two new flat bottom elements were placed over the ash layer. Two upright slabs were placed against the east wall and two deflectors abutting the south and east walls were added. The interior dimensions of this hearth were 42cm x 40cm.

The hearth was surrounded by an ash lens 3cm deep. A rib was associated with this feature and located 25cm north of the firebox, against the east wall. In front of the hearth to the northwest were two flat, river smoothed basalt slabs which may have been used as pot rests.

Room Fill: The fill from Room 8 was 90cm deep and homogeneous. It was characterized as sandy-loam with small river pebbles scattered throughout. Along the wall areas there were patches of adobe plaster. Cultural material included sherds, lithics, bone and a religious medal. A piece of burned wood was found in level 1. This material was collected in two arbitrary levels: level 1 (0 to 55cm) and level 2 (55cm to 90cm).

Rubble: A total of eight cubic meters of wall fall was found within and contiguous to room 8. The total volume of the existing walls was 8.99 cubic meters. By calculating the volume of the existing wall height and volume of the rubble, it was possible to estimate that the original wall height of Room 8 was no more than 1.5m above floor level.

Exterior Fill: Excavated grids associated with Room 8 included D2, D3 and F5. Exterior fill consisted of mixed sand and gravel.

Exterior Features: No exterior features were found.

Room 9:

Room 9 was built against the north wall and below Room 8. The second room may have been a corral or pen.

Shape: Oval surface structure.

Orientation: The long axis of the structure was 12 degrees west of true north.

Condition: The room exhibited little erosion and very little vandalism.

Interior Room Dimensions:

	Length	Width	Height
North	3.20m	.12m	.67m
South	3.20m	part of Room 8	.75m
East	3.40m	.10m	.62m
West	3.10m	.15m	1.97m

Walls: A description of the north, east and west walls follows due to their similarity in construction. The south wall of Room 9 is described as the north wall of Room 8.

Type of Elements: Local basalt slabs.

Size of Elements: Larger elements ranged in size from 74cm x 40cm to 85cm x 48cm. Smaller element sizes were 27cm x 20cm to 17cm x 6cm.

Placement and Construction of Elements: The walls were constructed of basalt slabs set vertically. There were 13 slabs set side by side in a circular pattern. Stones of smaller size were used as chinking. They were laid horizontally and stacked to the height of the larger elements. The elements were laid in adobe mortar.

Shape of Elements: Unmodified.

Wall Facing: Flat surfaces were placed to form a flat surface on the interior of the structure.

Courses: The large vertically set basal elements were one element wide and one course high.

Chinking: The chinking was composed of small basalt stones stacked horizontally to the height of the larger elements.

Corners: The east and west walls abutted the north wall of Room 8.

Plaster: No plaster was present.

Entrances: No entrance was discernable.

Floors: The floor was not well defined. The greater portion of the floor was comprised of hard-packed dirt, although occasional patches of adobe 1.0cm to 1.5cm were apparent. The floor was 1.5cm thick and 1.17cm below the Room 8 floor. The southern portion of the Room 9 was slightly excavated into the knoll on which Room 8 was constructed. Approximately 20cm of fill covered the floor.

Roofing: No evidence of roofing materials was recovered.

Interior Features: No features were evident.

Room Fill: The fill was shallow. It consisted of 20cm of sandy loam mixed with small pebbles. A large diffuse stain of charcoal flecked soil between 5cm and 10cm thick was defined 10cm below the surface. A few sherds and lithics were associated with the sandy fill: none were recovered from the charcoal soil lens.

Rubble: There was virtually no wall fall from this room. It appears that the walls were not any higher than they are today. Room 9 may have been a foundation for a brush corral or patio.

Exterior Fill: The entire west wall was exposed on the outside. A total of 16 square meters of rubble and fill was removed adjacent to the west wall. Bone, sherds and lithics were found in this area and were recovered by grid as a single unit (level 1).

Exterior Features:

Occupation Surface: A hard packed surface was found at the base of the structure along the west wall which extended westward about 1.5m. This surface may

represent the original ground surface at the time the room was occupied.

Artifactual Assemblages

The largest quantity and diversity of materials recovered from LA 9138 were located in Provenience 4. Although the amount and kind of artifactual debris recorded for Rooms 8 and 9 were generally similar to that found in the other rooms at LA 9138, the gridded area outside the rooms in Provenience 4 exhibited substantially higher frequencies of lithic and ceramic materials possibly indicative of exterior activity areas. With the exception of the large number of ceramics recovered from Provenience 1, evidence of such areas was not recovered from the other proveniences.

Room 8, levels 1, 2

The fill in Room 8 extended to a depth of 90cm. Artifactual materials were collected in two arbitrary levels, although they will be summarized as a single sample. One mano fragment was documented in the hearth feature; no other artifacts were recorded in direct contact with the floor.

Ceramic Artifacts

Fifty-three sherds representing a minimum of nine vessels were recovered from the fill in Room 8. These vessels reflected a wider variety of local and imported ceramics than found at the other rooms at LA 9138. Polished red-slipped sherds from a jar made at Acoma Pueblo and sherds from broad-line red-on-buff bowls, both local and Tewa-made, were recovered. Other locally made vessels included a crystalline basalt tempered Puname Polychrome olla and a crystal pumice tempered Ogapoge Polychrome olla. Sherds from an unfired or underfired "bisqueware" jar were also present.

Lithic Artifacts

A total of 73 lithic artifacts was recovered from the fill in Room 8. The majority of lithics were debitage (78.1%) and small angular debris (16.5%). Additional artifacts included one core, one piece of large angular debris, one resharpening flake and one uniface.

1. Material Selection

Nine different material taxons were recovered. The majority were either chert (43.8%, 4 taxons) or chalcedony (42.5%, 1 taxon). The remaining taxons represented included obsidian (6.8%, 2 taxons), quartzite (4.1%, 1 taxon), jasperoid (1.4%, 1 taxon) and basalt (1.4%, 1 taxon). These taxons are locally available in the Cochiti area. The chalcedony and chert may have been selected from a nearby outcrop of the Totavi Lentil.

2. Manufacture

Cortical and noncortical debitage and small angular debris for at least two material taxons (1215, 1051) occur in sufficient frequencies to suggest primary manufacturing activities. Two larger by-products of manufacture, a core and a piece of large angular debris, were also recovered for taxon 1051. The majority of artifacts were produced through freehand detachment of debitage and small angular debris. Three bipolar flakes, which indicate a different technique of manufacture, were recovered as well.

3. Tool Use

Limited use of at least two facially retouched artifacts is indicated. One artifact, a chert uniface, exhibited wear; and the other, a chalcedony resharpening flake, suggests the presence and possible use of another tool. The remaining 11 tools were pieces of debitage. These included chalcedony (6 tools, 11 edges), obsidian (3 tools, 7 edges) and quartzite (1 tool, 1 edge). These tools exhibited a diversity in outline shape (7 concave, 6 convex, 6 straight and 1 projection). There was no apparent difference in use between the different material types; almost all edges exhibited perpendicular step fracture indicative of scraping utilization. A few were characterized by nibbling.

Bone Artifacts

No bone artifacts were recovered from Room 8.

Historic Artifacts

Two metal items were recovered from the upper 55cm of fill in Room 8; these included a religious medal and a fragment of iron. The medal depicted two haloed male heads, one of Saint Peter and the other of Saint Paul. The inscriptions were in Italian. The medal could not be dated (Lang, personal communication).

Faunal Materials

A total of 13 bone fragments was recovered from the fill in Room 8. Five different individuals were represented: an Artiodactyla; a bison/cow/elk/horse; a medium-large mammal; a large mammal, and a large bird. Bone fragments, possibly portions of the same Artiodactyla, medium-large mammal and the large mammal individuals, were also recovered from Room 9.

Floral Materials

An unburned peach pit fragment was recovered from the 35cm thick layer of fill which directly overlay the floor.

Room 9, level 1

The 20cm thick layer of fill above the floor in 9 was collected as a single unit. No artifacts were documented in direct contact with the floor. Few materials were recovered from the fill in Room 9.

Ceramic Artifacts

Six sherds from a single basket-impressed or molded utility ware bowl (?) were recovered from Room 9. The vessel was tempered with vitrophyre which is locally available in the Southern Pajarito Plateau and Cochiti areas.

Lithic Artifacts

A total of 67 lithics was recovered from the fill in Room 9. The majority were debitage (82.1%) and small angular debris (13.4%). Additional lithics collected included three cores.

1. Material Selection

A total of 12 different material taxons was represented for this assemblage. Specifically, 35.8% of the as-

semblage was manufactured from chalcedony (4 taxons), 20.9% from both obsidian (3 taxons) and chert (3 taxons); 17.9% from basalt (3 taxons); and 4.5% from quartzite and jasperoid (one taxon each). Most of these material taxons are locally available in the Cochiti study area.

2. Manufacture

Cortical and noncortical debitage and small angular debris manufactured from a minimum of two material taxons (1215, 1050) occur in sufficient frequencies to suggest the presence of primary manufacturing activities for the assemblage. Two cores were manufactured from 1215 and one from another material taxon. These artifacts were produced through freehand percussion detachment of debitage and small angular debris.

3. Tool Use

Only six pieces of debitage and small angular debris had been used as tools. This represents 9% of the total assemblage. Five of these artifacts (six edges) were obsidian. The other was manufactured from quartzite. These tools exhibited considerable diversity in outline shape and utilization.

Bone Artifacts

A single bone fragment had been selected for use. It was a Class 4 artifact and exhibited a highly polished exterior surface bordered by green breaks. It is of unknown function.

Historic Artifacts

No historic artifacts were recovered from the fill in Room 9.

Faunal Materials

A total of 20 bone fragments were recovered from the fill in Room 9. Up to six different individuals were represented: an Artiodactyla; a medium-large mammal; a large mammal; an indeterminant mammal; a black tailed jackrabbit; and a medium-large bird. A piece of an eggshell was also recovered.

Floral Materials

Several burned peach pit fragments and an unidentified burned nut fragment were recovered from the fill in Room 9.

Grids associated with Rooms 8 and 9

A system of 1.0m x 1.0m grids was superimposed over Provenience 4. These grids extended 11m north south and 17m east-west. Artifactual debris was distributed roughly in a three meter wide arc to the north and east of the rooms. High density lithic materials were located in grids to the north of Room 8; high density ceramic materials flanked Room 8 to the north and east, and portions of Room 9 to the east.

Ceramic Artifacts

A total of 290 sherds from as many as 79 different

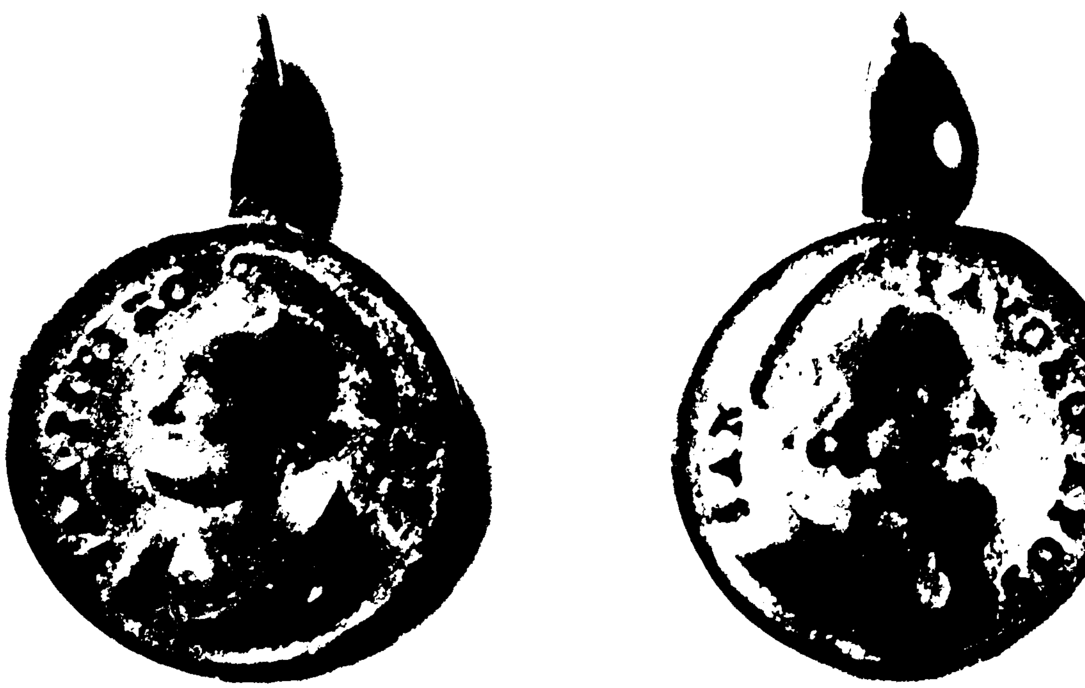


FIG. 9.10 LA 9138 Medallion of Saint Peter and Saint Paul

vessels was recovered from the grids in Provenience 4. Only nine vessels exhibited more than nine sherd fragments: these included one Ogapoge Polychrome olla; two Puname Polychrome vessels, one olla and one jar; one Carbon Polychrome jar; one polished plain redware olla and three utility jars. The majority of the remaining vessels were characterized by only one or two sherd fragments. Since relatively little work has been done on typing historic ceramics in the Middle Rio Grande area, it is possible that some of the typed and untyped categories may represent the same vessels and hence have inflated the total count of vessels. Nevertheless, the sherd count for this provenience is high, regardless of the absolute number of vessels.

Three areas were identified which exhibited high frequencies of ceramics. One area was to the north of Room 8 and centered around grids J10 and J11; an-

TABLE 9.9

LA 9138 PROVENIENCE 4—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	VITRIC TUFF (Nambe)	VITRIC TUFF (N. Rio Grande)	PUMICE	VESICULAR BASALT	LOCAL BASALT	VITROPHYRE	SANDSTONE	OTHER	TOTAL
Room 8, levels 0,1										
Ogapoge Polychrome	olla	–	–	21	–	–	–	–	–	21
Puname Polychrome	olla	–	–	–	–	11	–	–	–	11
Red/buff	bowl	2	–	1	–	–	1	–	–	4
Redware (polished)	olla	–	–	–	–	–	–	–	4	4
Buffware (polished)	olla	–	–	1	–	–	–	–	–	1
Plainware (pol. interior)	jar	–	–	–	–	–	7	–	–	7
Plainware (bisque)	n.d.	–	–	–	–	–	–	–	5	5
Total—Room 8		2	0	23	0	11	8	0	9	53
Room 9, level 1										
Plainware (unpolished)	bowl	–	–	–	–	–	6	–	–	6
Grids										
Ogapoge Polychrome	bowl	1	–	–	–	–	–	–	–	1
	olla	2	–	10	–	–	–	–	–	12
	jar	2	–	–	–	–	–	–	–	2
Carbon Polychrome	hemis. bowl	–	–	7	–	–	–	–	–	7
	bowl	6	–	3	–	–	–	–	–	9
	olla	4	–	3	–	–	–	–	–	7
	jar	14	–	1	–	–	–	–	–	15
Carbon/red-buff	jar	2	–	–	–	–	–	–	–	2
Puname Polychrome	olla	–	–	–	–	45	1	3	–	49
	jar	–	–	–	–	18	1	2	–	21
Red/buff	bowl	2	–	–	–	–	–	–	–	2
	olla	–	–	2	–	–	–	–	–	2
Redware (polished)	bowl	2	1	–	4	3	13	–	–	23
	olla	1	–	4	–	16	–	1	–	22
	jar	1	–	3	–	7	1	–	–	12
Buffware (polished)	bowl	–	–	–	–	–	1	–	–	1
	olla	3	–	–	–	2	–	1	–	6
Redware (Kotviti G/R?)	olla	–	–	–	–	–	–	3	–	3
Tanware (Glaze F?)	olla	–	–	–	–	–	–	1	–	1
Unid. glaze-polychrome	bowl	–	–	–	–	1	–	–	–	1
	jar	–	–	1	–	–	–	–	–	1
Plainware (red. scored)	jar	–	–	–	–	–	4	–	–	4
Plainware (pol. interior)	jar	–	–	30	–	–	28	14	–	72
Plainware (unpolished)	jar	–	–	–	–	–	–	9	–	9
Redware (Glaze A?)	bowl	–	–	1	–	2	–	–	–	3
	olla	–	–	–	–	2	1	–	–	3
Total—Grids		40	1	65	4	96	50	34	0	290

other was to the east of Room 8 and centered on grids H15 and I15: the third was to the east of Room 9 and included grids E13 and E15. At least one of the vessels, which are represented by more than nine sherds, occurs in or adjacent to these high density clusters.

Lithic Artifacts

A total of 246 lithic artifacts was recovered from the grids superimposed over Provenience 4. Lithics were recovered from 37 1.0m x 1.0m grid units which resulted in a mean frequency of 6.7 artifacts per sq. meter for those grids exhibiting lithics and 1.3 artifacts per sq. meter for the gridded area as a whole. Debitage and small angular debris, as monitored by weight, were distributed in two relatively high density concentrations to the north of Room 8. Low count items, large angular debris, cores, hammerstones, ground stone and facially retouched artifacts occurred frequently in these concentrations, although they also occurred in equal frequencies elsewhere in the grid.

The majority of lithics recovered were debitage (61.9%) and small angular debris (29.2%). Large angular debris represented 4.4% of the assemblage. Additional lithics included four cores, one hammerstone, one uniface, two bifaces and one gunflint.

1. Material Selection

Twenty-three different material taxons were recovered from the grids. The majority were chalcedony (53.8%, 7 taxons), basalt (22.3%, 6 taxons) and chert (14.2%, 4 taxons). Other materials include obsidian (6.1%, 3 taxons), quartzite (2.0%, 1 taxon), quartz (0.4%, 1 taxon) and jasperoid (0.4%, 1 taxon). The majority of these material taxons are locally available in

TABLE 9.10

LA 9138 PROVENIENCE 4—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 8, LEVELS 1, 2													
Obsidian:	3530	5	—	—	—	—	—	—	—	—	—	—	5
Basalt:	3700	—	1	—	—	—	—	—	—	—	—	—	1
Chert:	1011	1	—	—	—	—	—	—	—	—	—	—	1
	1050	1	—	—	—	—	—	—	1	—	—	—	2
	1051	19	4	—	1	1	—	—	—	—	—	—	25
	1090	3	1	—	—	—	—	—	—	—	—	—	4
Chalcedony:	1215	26	4	1	—	—	—	—	—	—	—	—	31
Quartzite, Jasp.:	4000	2	1	—	—	—	—	—	—	—	—	—	3
	1501	—	1	—	—	—	—	—	—	—	—	—	1
Room Totals		57	12	1	1	1	0	0	1	0	0	0	73
ROOM 9, LEVEL 1													
Obsidian:	3524	1	1	—	—	—	—	—	—	—	—	—	2
	3525	5	—	—	—	—	—	—	—	—	—	—	5
	3530	7	—	—	—	—	—	—	—	—	—	—	7
Basalt	3700	1	—	—	1	—	—	—	—	—	—	—	2
	3050	8	1	—	—	—	—	—	—	—	—	—	9
	3430	1	—	—	—	—	—	—	—	—	—	—	1
Chert:	1050	7	4	—	—	—	—	—	—	—	—	—	11
	1051	1	1	—	—	—	—	—	—	—	—	—	2
	1090	1	—	—	—	—	—	—	—	—	—	—	1
Chalcedony:	1052	2	—	—	—	—	—	—	—	—	—	—	2
	1053	2	—	—	—	—	—	—	—	—	—	—	2
	1091	6	1	—	—	—	—	—	—	—	—	—	7
	1215	10	1	—	2	—	—	—	—	—	—	—	13
Quartzite, Jasp.:	4000	1	—	—	—	—	—	—	—	—	—	—	1
	1501	2	—	—	—	—	—	—	—	—	—	—	2
Room Totals		55	9	0	3	0	0	0	0	0	0	0	67

TABLE 9.10 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 4 EXTERIOR GRIDS													
Obsidian:	3525	–	1	–	–	–	–	–	–	–	–	–	1
	3530	10	2	–	–	–	–	–	–	–	–	–	12
	3510	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3701	5	–	–	–	–	–	–	–	–	–	–	5
	3700	21	9	–	1	–	–	–	–	–	–	–	31
	3030	4	3	–	–	–	–	–	–	–	–	–	7
	3050	4	4	–	–	–	–	–	–	–	–	–	8
	3430	2	–	–	–	–	–	–	–	1	–	–	3
	3730	–	–	–	–	1	–	–	–	–	–	–	1
Chert:	1050	4	3	–	–	–	–	–	–	–	–	–	7
	1051	6	5	–	–	1	–	–	–	–	–	–	12
	1070	2	–	–	1	–	–	–	–	–	–	–	3
	1090	5	8	–	–	–	–	–	–	–	–	–	13
Chalcedony:	1052	8	4	–	–	–	–	–	–	–	–	–	12
	1053	10	–	–	–	1	–	–	–	–	–	–	11
	1091	21	9	–	–	1	–	–	–	–	–	–	31
	1213	–	1	–	–	–	–	–	–	–	–	–	1
	1214	–	1	–	–	–	–	–	–	–	–	–	1
	1215	47	18	–	2	6	–	–	2	–	–	–	75
	1340	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	3	1	–	–	–	–	–	1	–	–	–	5
	4001	–	1	–	–	–	–	1	–	–	–	–	2
	1501	1	–	–	–	–	–	–	1	–	–	–	2
Grid Totals		156	70	0	4	10	0	1	4	1	0	0	246

the Cochiti area, although some imported materials such as obsidian 3510 are present.

2. Manufacture

The relatively high frequency of cortical and noncortical debitage and small angular debris indicates the presence of primary manufacturing activities within the gridded areas for a minimum of five material taxons. These taxons include chalcedony (1215, 1091, 1052), basalt (3700) and chert (1051). In general, the reduction technique employed for all materials appears to have involved the preparation of noncortical platforms and freehand percussion detachment of debitage. Two bipolar flakes were recovered as well, however.

3. Tool Use

A total of 33 pieces of debitage and small angular debris had been used as tools. This represented 13.4% of the total assemblage. Seventeen were chalcedony (27 edges); two were chert (3 edges); two were obsidian (3 edges); and two were basalt (2 edges). Twelve edges had been retouched, including one into the shape of a projection. The edges exhibited some diversity in outline shape, although a majority were straight. Perpendicular step fracture occurred most frequently (19 edges). Diagonal step fracture, nibbling and diagonal feathers occurred less frequently. None of the utilized edges exhibited rounding, polish, striations or beveling. A diversity in activities is suggested by this assemblage.

Additional tool use is indicated by the presence of a quartzite hammerstone in grid I13, in the second high density concentration noted above. A two-hand mano, manufactured from vesicular basalt, was recovered from the same concentration as the hammerstone in grid K13.

Bone Artifacts

No bone artifacts were recovered from the grids in Provenience 4.

Historic Materials

Three wood fragments, possibly from a weaving comb, were recovered in Grid E15.

Faunal Resources

Two pieces of bone, one rib fragment and one long bone shaft fragment, both portions of a large mammal, were recovered from a 10cm test along the west wall of Room 8 near the doorway.

SUMMARY

Prehistoric Component

Ceramic fragments recovered from the fill of both Room 6 and Room 7 were manufactured during two different phases of the Anasazi Period. Room 6 apparently dates in construction and occupation to the late P-III phase although the occupation might have extended into the early P-IV phase. Room 7 dates to the P-IV phase.

Room 6 was a nearly circular, slightly semisubterranean structure encompassing 3.1 square meters of floor space and containing a hearth facility. The room differs considerably in constructional detail from other P-III phase architectural facilities documented both through previous research in the Cochiti study area and within Cochiti Reservoir. Room 6 was circular in outline shape rather than rectangular and exhibited no masonry footings for wall superstructures. No evidence of wall construction or roof construction was observed for the room but the presence of an interior firepit can be taken to indicate that some kind of superstructure existed at one time.

No direct evidence of food resources processed or consumed was recovered from the room although indirect evidence of processing was represented through a mano fragment. Thirteen fragments from a minimum of six different ceramic vessels, including three bowls and two jars, were found as well. Primary stages of stone tool manufacture were indicated through reduction of at least three different taxons of material but only one utilized tool was recovered.

The occupation of Room 6 does not appear to have been intensive in nature or of long duration given the low volume of artifactual debris recovered from the room fill. Only limited excavations were undertaken outside the room structure and artifactual debris in those areas cannot necessarily be attributed solely to the occupation of the room due to its proximity to other architectural features in the near vicinity.

Room 7 was a semisubterranean room encompassing 2.1 square meters of floor space which was constructed and occupied during the P-IV phase of the Anasazi Period. Two distinct occupation episodes were represented in the room fill and architectural remodeling. The room was originally constructed with an interior hearth and an above floor wall entrance to the east. After an apparent occupational hiatus, the room was remodeled through preparation of a new floor surface on top of ca. 24cm of accumulated fill. The second occupation remodeling resulted in modifying the existing entrance into a floor level rather than above floor entry and did not involve construction of a hearth facility.

No direct evidence of food resources procured or processed was recovered from fill associated with the first occupation of the room. Ceramic fragments from a minimum of five different vessels, two bowls and three jars, were recovered, as was a considerable amount of stone tool manufacturing debris. Only three tools, however, were found. All were utilized pieces of debitage.

The second occupation of Room 7 may have involved some change in use made of the room structure in that no hearth facility was constructed and the fill associated with the remodeled floor contained very few by-products of stone tools manufacture. Only two pieces of debitage exhibited evidence of utilization. A minimum of nine different ceramic vessels were represented in the ceramic assemblage, including four bowls and five jars. The only direct possible evidence of food resources consumed was a single skull fragment from a fish.

The ceramic vessel assemblages associated with both occupations of Room 7 are somewhat different from those recovered from other P-IV phase sites within Cochiti Reservoir in that all vessels were manufactured from locally available tempering materials and no olla forms were represented. The lack of vessels manufactured from tempers available in other regions indicates that the occupants of Room 7 were not necessarily participating in the interregional exchange system which seems to characterize much of the P-IV phase. Ollas, presumably representative of short term food and water storage, are common at other small P-IV phase sites as well. The lack of these vessel forms in association with both occupations of Room 7 may indicate a different set of food resources were being consumed at the site location.

Historic Component

The Historic Period component of occupation for LA 9138 consisted of four different architectural structures constructed and inhabited during the Spanish Colonial phase. These structures included Rooms 1 and 2 in Provenience 1, Rooms 3 and 4 in Provenience 2, Room 5 in Provenience 3 and Rooms 8 and 9 in Provenience 4. Ceramic fragments recovered through excavation of all four provenience locales indicate that all the structures were constructed and inhabited during the middle to late 18th century. With the exception of Room 2, which appears to have been constructed at a later date than Room 1 and which may have been occupied contemporaneously with the reuse of Rooms 1, 3 and 4 as corral facilities, the occupation of all rooms may have been contemporaneous.

The rooms constituting the first historic occupation of the site were generally large, although the amount of enclosed floor space varied from 8.0 square meters to 19.0 square meters. Room 1 (11.9 square meters) contained a corner fire hearth, as did Room 3 (19.0 square meters), Room 4 (10.7 square meters) and Room 8 (11.2 square meters). Room 5 (14.5 square meters) and Room 9 (8.0 square meters) did not contain hearth features although Room 9 exhibited a large charcoal stain over much of its floor surface. Room 2, which represented a reoccupation of Provenience 1, enclosed 2.4 square meters of floor space and did not contain a hearth feature.

Constructional detail was relatively similar among Rooms 1, 3, 4 and 5 in that all were rectangular in outline shape and were built from relatively large, horizontally laid basalt clasts. Room 8 was oval in outline shape although similarly constructed from horizontally laid basalt clasts. Room 9 was circular in outline and the basal elements of the walls were vertically set basalt slabs. Very little evidence of upper wall construction was found in the fill or exterior of Room 9 and it may have once been a partially open-sided or unroofed structure.

Considerable variability in the amount of artifactual debris and faunal remains generated through habitation of the different structures was evident through excavations within and outside the structures themselves.

Direct evidence of food resources possibly consumed within different provenience locales was recovered as a relatively diverse set of faunal species, including domesticated sheep or goat, cow or bison, elk or horse, cottontail rabbit, jackrabbit, different sizes of birds, a squirrel, woodrat, pocket mouse and fish. In addition, several pinyon nuts, peach pits and unidentified nut shell fragments were found.

No direct evidence of agriculturally produced foodstuffs other than peach pits was encountered and only three milling implements which might have been employed for processing agriculturally produced grains were found. A two-hand mano was recovered from the grid excavations in Provenience 4 and mano fragments were found in Room 4 and Room 8. No metates or metate fragments were recovered and no comal fragments were present in the overall ceramic assemblage It thus appears that the subsistence strategy of the inhabitants focused upon both herding and nondomestic

TABLE 9.11

LA 9138

MEAT PACKAGES AND LONG BONE SHAFT FRAGMENTS FOR MINIMUM NUMBER OF INDIVIDUALS

		ELEMENTS REPRESENTED								
		LOW MUSCLE MASS					HIGH MUSCLE MASS			
TAXON	MINIMUM NUMBER OF INDIVIDUALS	Vertebrae	Pelvis	Skull	Mandible	Lower Leg	Ribs	Scapula	Upper Leg	LONG BONE SHAFT FRAGMENTS
Ovis spp./*Capra* spp.	2			1		5				
Bison bison, Cervus elaphas, Bos tarus, Equus caballas	1						2			
Lepus californicus	1					1				
Sylvilagus spp.	1	2		1			1			
Sciurus aberti	1		1							
Anatinae	1				1		1	1		
Passeriformes	1					1				
Neotoma spp.	1		2		1					
Perognatus spp.	1			1						
Fish	1	1					1			
ADDITIONAL OVERLAPPING FAUNAL ELEMENTS										
Artiodactyla	2	2		3	4	2	3	1		1
Large Mammal	1	1		3		1	7		1	14
Medium-Large Mammal	2	3				2	15			1
Mammal	1						7			
Large Bird	1						2	1		
Medium-Large Bird	1						1			
Small Rodent	1			1					1	

Number of identifiable bones: 101

Percent of long bone shaft fragments: 15%

faunal procurement of a wide range of species.

Very little artifactual evidence was recovered to indictate that either hideworking or manufacture of woolen goods was undertaken at the site. Although possible fragments of a weaving comb were found, no spindle whorls were recovered and the bone tool assemblage contained no artifacts which may have been employed in skinning or hide preparation. Two bone needles were recovered, each from different proveniences.

In this respect, the kinds of activities undertaken at LA 9138 are considerably different from those undertaken by the inhabitants of LA 12161, another Spanish Colonial phase site location situated further upriver in White Rock Canyon. This latter site yielded artifactual evidence indicative of considerable investment into both hide and woolen clothing manufacture.

Ceramic fragments recovered from all proveniences of LA 9138 reflect a range of cooking, serving and short term storage activities. The vast majority of fragments were found outside rather than inside room structures. Twenty-one vessels are represented in the Provenience 1 assemblage, 17 in the Provenience 2 assemblage, 5 in the Provenience 3 assemblage and 51 in the Provenience 4 assemblage. Bowls, jars and ollas were found in nearly equivalent frequencies within Provenience 2, whereas ollas predominated the Provenience 1 assemblage and jar predominated the Provenience 4 assemblage. Of the 5 vessels represented in the Provenience 3 assemblage, three were ollas and two were bowls.

With the exception of a single P-IV phase vessel recovered from Room 5 in Provenience 3, all vessels were manufactured from tempering materials available within the Cochiti study area. It can be suggested from this that the local inhabitants were not participating in any interregional system of exchange involving circulation of ceramic vessels such as that apparently characteristic of the P-IV phase settlement of the study area. The ceramic assemblage from LA 12161 reflect a similar localization with respect to ceramic manufacture.

Assemblages of tools and by-products of toolmanufacture recovered from the four Spanish Colonial proveniences within LA 9138 are intriguing in that they may reflect technological behavior of individuals who are relatively unfamiliar with manufacture or usage of stone tools but who at the same time had no access to metal implements.

The only evidence for the utilization of metal implements found with respect to the Historic Period component of occupation at LA 9138 was a gunflint manufactured from locally available chert. A total of five fragments of iron and a small medallion comprised the only direct evidence of metallurgically produced artifacts at the site location. Butchering cut marks observable on skeletal fragments were all produced through usage of stone rather than metal implements as well.

When compared to the occurrence of metal items and indirect evidence of metal implement usage at LA 12161, the artifactual content of LA 9138 clearly reflects to a much greater degree the operation of a "stone age" rather than "iron age" technology.

Selection of lithic materials for manufacture of stone implements by the inhabitants of LA 9138 was localized in nature. The vast majority of stone materials ultimately manufactured were cherts and chalcedonies which are immediately available in an exposed outcrop of the Totavi Lentil which comprised the lower portion of the talus slope situated directly east of the site itself. Obsidians and glassy basalts, although available within a kilometer radius of the site location, were rarely selected for manufacture. This is in marked contrast to the Archaic and Anasazi tool manufacturers who rou-

TABLE 9.12

LA 9138 HISTORIC COMPONENT–DISTRIBUTION OF FAUNAL REMAINS

		Provenience 1			Provenience 2			Provenience 3	Provenience 4	
TAXON	Minimum No. of Individuals	Room 1	Room 2	F 3	Room 3	Room 4	P 6	Room 5	Room 8	Room 9
Domestic Sheep or Goat	2	x		x	x	x	x			
Bison, Elk, Cow or Horse	1								x	
Blacktailed Jackrabbit	1									x
Cottontail Rabbit	1	x				x				
Abert's Squirrel	1					x				
Surface Feeding Ducks	1	x							x	x
Small Song Birds	1					x				
Woodrat	1	x				x				
Pocket Mouse	1	x								
Fish	1		x							

TABLE 9.13

LA 9138—BONE AND ANTLER ELEMENT BREAKAGE

TAXON	ELEMENT	TOTAL	GREEN BREAK	*RECENT FRESH	COMPLETE	UNKNOWN
Ovis spp./*Capra* spp.	skull	1		1		
	calcaneum	1			1	
	metatarsal	1		1		
	astragalus	2			1	1
	radius	1				1
	TOTAL	6		2	2	2
Bison, Elk, Cow or Horse	rib	2	2			
	TOTAL	2	2			
Lepus californicus	tibia	2	1**	1		
	calcaneum	1			1**	
	TOTAL	3	1	1	1	
Sylvilagus spp.	skull	1	1			
	lumbar	2			2	
	rib	1		1		
	TOTAL	4	1	1	2	
Sciurus aberti	innominate	1			1	
	TOTAL	1			1	
Passeriformes	ulna	1			1	
	TOTAL	1			1	
Anatinae	mandible	1		1		
	scapula	1	1			
	sternum	1		1		
	TOTAL	3	1	2		
Fish	skull	1		1**		
	vertebra	1				1
	rib	1			1	
	TOTAL	3		1	1	1
Artiodactyla	skull	3	1	2		
	axis	2	2			
	incisor	3			2	1
	radius	1	1			
	ulna	1		1		
	sacrum	1	1			
	xiphnigthum	1	1			
	rib	2		1	1	
	long bone shaft frag.	1	1			
	TOTAL	15	7	4	3	1
Large Mammal	skull	3	1	1		1
	thoracic	1		1		
	humerus	1	1			
	ulna	1		1		
	rib	7	1	4		2
	long bone shaft frag.	14	13			1
	TOTAL	27	16	7		4
Medium-Large Mammal	skull	1		1		
	thoracic	3		2		1
	podial	1			1	
	tibia	1	1			
	rib	15	3	9	2	1
	unknown	2		1		1
	long bone shaft frag.	1	1			
	TOTAL	24	5	13	3	3
Mammal	rib	7		7		
	unknown	4	1	3		
	TOTAL	11	1	10		
Large Bird	scapula	1		1		
	rib	2		1	1	
	TOTAL	3		2	1	

*broken after occupation
**belong to P-IV component

tinely selected both materials for reduction because of their superior workability in manufacture and utility as implements.

Techniques of debitage reduction employed by the inhabitants of LA 9138 reflect a much higher incidence of bipolar manufacture than is apparent in the Archaic or Anasazi Period lithic assemblages. Given the fact that bipolar reduction of raw materials generally results in relatively few pieces of debitage or cores which exhibit morphological criteria directly attributable to bipolar manufacture, the frequency of such by-products in assemblages recovered from LA 9138 indicates considerable implementation of that technique. Lithic assemblages from the site are characterized as well by relatively higher frequencies of debitage exhibiting cortex across both their platforms and dorsal surfaces, which is a common characteristic of cortical debris generated from bipolar reduction.

It can be suggested, then, that the lithic artifact assemblage recovered from LA 9138 reflect an overall strategy of material selection and debitage reduction by a set of personnel who were unfamiliar with the distribution of raw materials in the vicinity of the site location, and who were equally unfamiliar with techniques through which raw materials could be reduced into utilizable tools through freehand percussion.

Another index of this unfamiliarity can perhaps be seen in the extremely low frequency of facially retouched artifacts manufactured or used at the site. Only three bifacially retouched artifacts, one of which was a gunflint, and two unifacially retouched artifacts were recovered through excavation. A single retouch flake constituted the only possible evidence that such artifacts may have been manufactured at the site location itself. All other utilized tools were either unretouched or marginally retouched pieces of debitage or small angular debris. This low frequency of facially retouched tool fragments and debitage indicative of their manufacture or usage within the site location, stands in marked contrast to assemblages recovered from prehistoric sites within the project area and may indicate a degree of inability on the part of the local inhabitants to manufacture such implements.

The Spanish Colonial phase settlement at LA 9138 is interesting in yet another fashion, for the simple reason that the site is located well south of the northern boundary of the Pueblo de Cochiti Grant. If date assigned to the manufacture of ceramic vessels recovered from the site can be warranted as reflecting the time of construction and habitation of architectural facilities at the site, the Spanish Colonial occupation of LA 9138 occurred between A.D. 1750-1800 and was thus initiated several decades after the Cochiti tribe had been allocated exclusive settlement rights to the land areas within which LA 9138 is situated.

As such, the settlement at LA 9138 may represent an attempt by Hispanic settlers to establish a homestead within the boundaries of the Cochiti land grant. The low overall volume of artifactual debris recovered from Proveniences 1, 2 and 3 indicate a relatively short period of occupation. The possibility thus exists that the inhabitants of those provenience locales may have been evicted soon after they had established their residence.

A final, and as yet unresolved, question concerning the Spanish Colonial occupation of LA 9138 is that of understanding the function of an extensive network of low drylaid masonry walls which runs not only throughout LA 9138 but extends as well over a considerable distance to the north and south of the site. Height of these walls rarely exceeds one meter and their functional utility as stock enclosures is dubious. In the vicinity of LA 9138 itself, the wall network is formed by a long spine running more or less parallel to the base of the talus slope and is characterized by a series of laterals extending at right angles from the spine toward the river. The laterals were constructed at relatively regular intervals, ca. 40m to 50m apart.

It is thus possible that the wall network was constructed to define property boundaries rather than to enclose stock. The question of "why" property boundaries were necessitated remains unanswered. Very little evidence exists that the inhabitants of LA 9138 engaged in agricultural pursuits which might have required field boundaries and the amount of possible grazing land defined by the walls is minimal.

LA 9139

LA 9139 was a single provenience Spanish Colonial phase site and consisted of a rectangular masonry structure (Room 1). The site was located on the east side of the Rio Grande River below the mouth of White Rock Canyon, approximately 100 meters south of Drainage Basin No. 1. LA 9139 was situated on the first coarse gravel terrace, which lies 20 meters above the river, at an elevation of 5280 ft. The terrace was flat, topped with sandy alluvium, and cut by a deep arroyo 50 meters to the south. The vegetation in the area indicated disturbance from the back dirt piles of a previous partial excavation as part of the Museum of New Mexico's Cochiti Dam Archeological Project in 1964. LA 9139 was located in the Juniper vegetative community; vegetative species included snakeweed, juniper, grama grasses and an occasional yucca.

During the present excavation, a one meter wide trench was first excavated to floor level along the interior of the south wall, beginning in the east corner. Another one meter wide trench was excavated perpendicular to the first trench, beginning 1.3m from the east wall. In addition, a stratigraphic test pit 1.0m x 1.0m was excavated in the center of the structure. The room was excavated by natural strata. A grid pattern was not placed over LA 9139, and the exterior surfaces were not tested. The focus of this testing was to gather information concerning the temporal period of occupation for this site.

Architecture

Room 1:

Shape: Rectangular surface structure.

Orientation: The long axis of the structure was 80 degrees east of true north.

Condition: The structure was uneroded. Previous excavation had resulted in clearing approximately one-half of the fill from the western side of the room.

Interior Room Dimensions:

	Length	Width	Height
North	10.90m	–	–
South	11.00m	.53m	.56m to .62m
East	4.40m	–	–
West	4.30m	.55m	–

Walls: All walls were of similar construction and are described together below.

Type of Elements: The walls were constructed of large basalt boulders and clasts not available in the immediate vicinity of the site. The size indicates that they were imported through use of wheeled transportation. River cobbles were sparsely intermixed in the wall matrix.

Size of Elements: The large elements ranged in size from .23m x .17m x .6m to .87m x .60m x .9m.

Placement and Construction of Elements: The walls were constructed of large tabular basalt with a few river cobbles intermixed. A few adobe bricks were found on the floor indicating a possible partial adobe structure. Elements were horizontally laid with adobe mortar.

Shaping of Elements: Unmodified.

Wall Facing: No information.

Courses: Elements were laid in uneven courses between one and two elements wide.

Chinking: No chinking elements were found.

Corners: No information.

Plaster: No plaster was evident from the present excavation, although Skinner's field notes (Skinner n.d.) indicate the presence of plaster on one wall.

Entrances: No doorway was found.

Floors: A continuous white plaster floor was exposed 60cm below the surface. Some ash smear was present and the plaster thickness was 2.5cm. The structure was slightly excavated into the slope of the hill and the floor was level.

Roofing: Approximately 30cm below the surface a layer of burned roof remnants was found. Burned vigas and clay were recovered. This stratum suggests that the structure burned.

Interior Features:

Hearth: Excavation exposed an ovoid basin shaped adobe hearth in the southeast corner of the structure. The hearth was raised slightly from the floor and had a

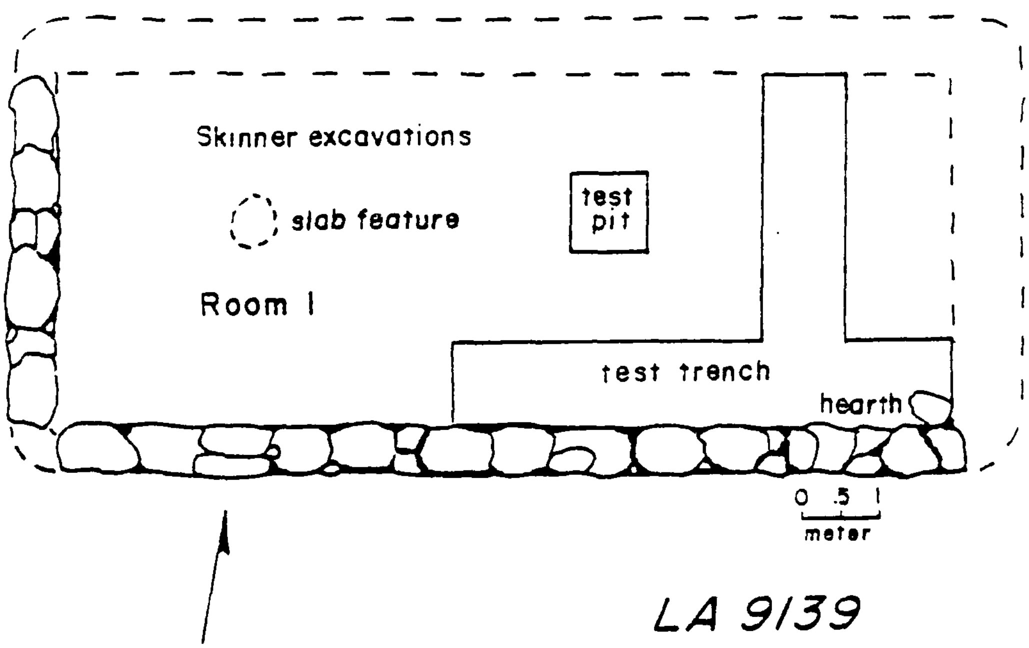


FIG. 9.11 LA 9139–Room 1, plan view

center depth of 5cm. The hearth measured 60cm x 40cm with its longitudinal axis 45 degrees from the wall. No cultural material was found in the fill of the hearth.

Slab Feature: Skinner identified a slab feature in the center of the western portion of the room. Although no charcoal was found, Skinner suggests it was a possible hearth.

Room Fill: The room fill consisted of several distinct strata indicating that the structure had burned. Three lenses of black ask were deposited within 10cm above the floor. A 16cm thick layer of burnt roof debris lay directly on top of the three thinner layers. A 34cm thick layer of coarse alluvial gravels and wall rubble was deposited above the burnt roof debris layer. Strata indicated that the structure burned prior to wall collapse. Wall rubble and gravel then washed into the room. All cultural material was recovered from the ash stratum on top of the floor. A peach pit was also found at floor level.

Exterior Fill: No exterior trenches were excavated.

Exterior Features: None.

Artifactual Materials

All of the materials derived from the tests were collected from a single ash lens, Stratum 5, which directly overlay the floor. Only 13 sherds, one peach pit and one bone fragment were recovered from the tests.

Ceramic Artifacts

Thirteen sherds were recovered from a test trench in Room 1 of LA 9139. All the sherds were manufactured during the Historic Period. The ceramic and temper types are similar to those recovered from the historic components of Pueblo del Encierro (LA 70) and LA 12438, which lie within 200m of LA 9139. The ceramics recovered suggest a minimum of seven vessels, five of which were manufactured from locally available materials. The estimated period of occupation is between A.D. 1750-1800.

One rim sherd from a Puname Polychrome bowl has

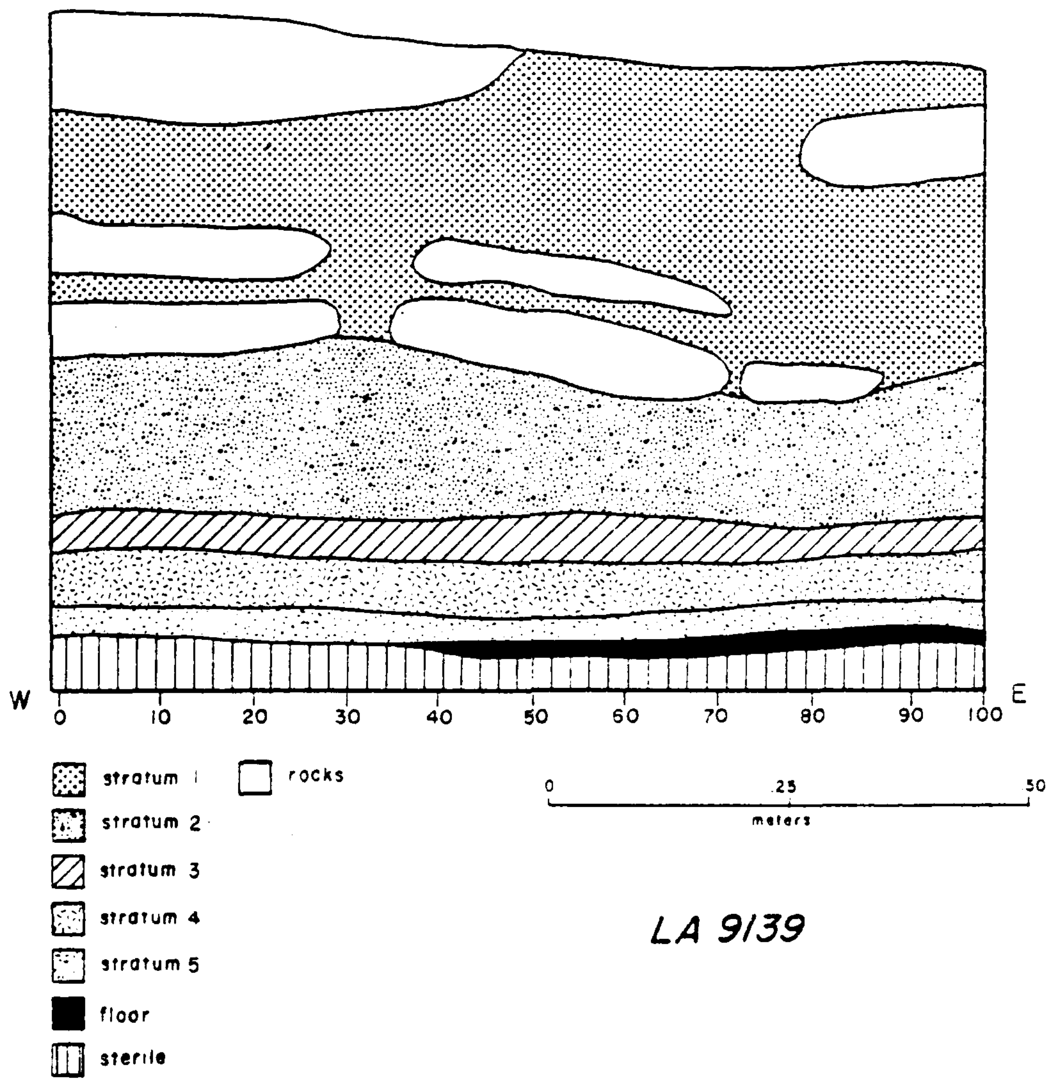


FIG. 9.12 LA 9139—Room 1, cross section

TABLE 9.14

LA 9139—CERAMIC TYPE AND TEMPER VARIABILITY

Type	Form	No. Sherds	Temper and Source Areas
Puname Polychrome	Carinated bowl	1	Diabase basalt, Zia Pueblo
"Casitas Red/Buff"	Flanged bowl	1	Volcanic sandstone: Southern Pajarito Plateau: Cochiti area
Redware (Historic)	bowl	1	Scoria: Cochiti area
Redware (Historic)	olla	1	Vitric tuff: Nambe area
Plain smudged utility	jar	1	Crystal pumice: Cochiti, White Rock Canyon areas
Plain smudged utility	jar	6	Andesite vitrophyre: Pajarito Plateau
Mica slipped utility	jar	2	Volcanic sandstone; Southern Pajarito Plateau, Cochiti areas

*all recovered from test trench in Room 1

an exterior red matte design outlined in black on a white slip, a red matte rim and a polished undecorated interior. The rim is 4.5mm high and expands from 3mm at the keel to 5mm at the top. Similar rim forms are found in carbon and glaze decorated vessels of the 18th century at sites along the Rio Chiquito to the west of White Rock Canyon. The rims of the plain and mica slipped utility vessels present at LA 9139 are everted and expanded at the top.

Lithic Artifacts

Lithic artifacts were not recovered during the tests.

Faunal Materials

One piece of bone was recovered from LA 9139. The bone was a burned Artiodactyla scapula blade fragment.

Botanical Materials

A single fragment from a peach pit was recovered from the room.

Summary

LA 9139 consisted of one large masonry structure. Although only 13 sherds were collected from the test, they were recovered in good context in a thin ash lens which directly overlay the floor. These ceramics indicate an occupation in the late 18th century. The lack of additional artifactual materials prevents speculation concerning the character of the occupation. It is possible that some materials collected from LA 12438, which lies 10 meters north of LA 9139, may be either associated or contemporaneous with the occupation of LA 9139.

LA 10110

During survey, LA 10110 was documented as a six provenience multicomponent Historic Period site. One provenience was characterized by a possible 18th century Spanish Colonial structure and a modern hearth. The other proveniences consisted of modern hearths, lithics, glass and metal artifactual scatters, an isolated wall, a road cut and petroglyphs. Only the first provenience, which included the possible structure, was tested.

LA 10110 lies on the west side of the Rio Grande in White Rock Canyon approximately 800 meters north of the mouth of Drainage Basin No. 24. The site is situated adjacent to the river on a low flat bench beneath an interface of the bench and an outcrop of talus. The site is located in the Upper Sonoran Juniper vegetative community and lies at an elevation which ranges between 5260 and 5300 ft. Dominant vegetation includes corriander, juniper, sage, unidentified bunch grasses and rabbitbrush.

The feature in Provenience 1 was described during survey as a structure of one to two rooms which extended five meters east-west and nine meters north-

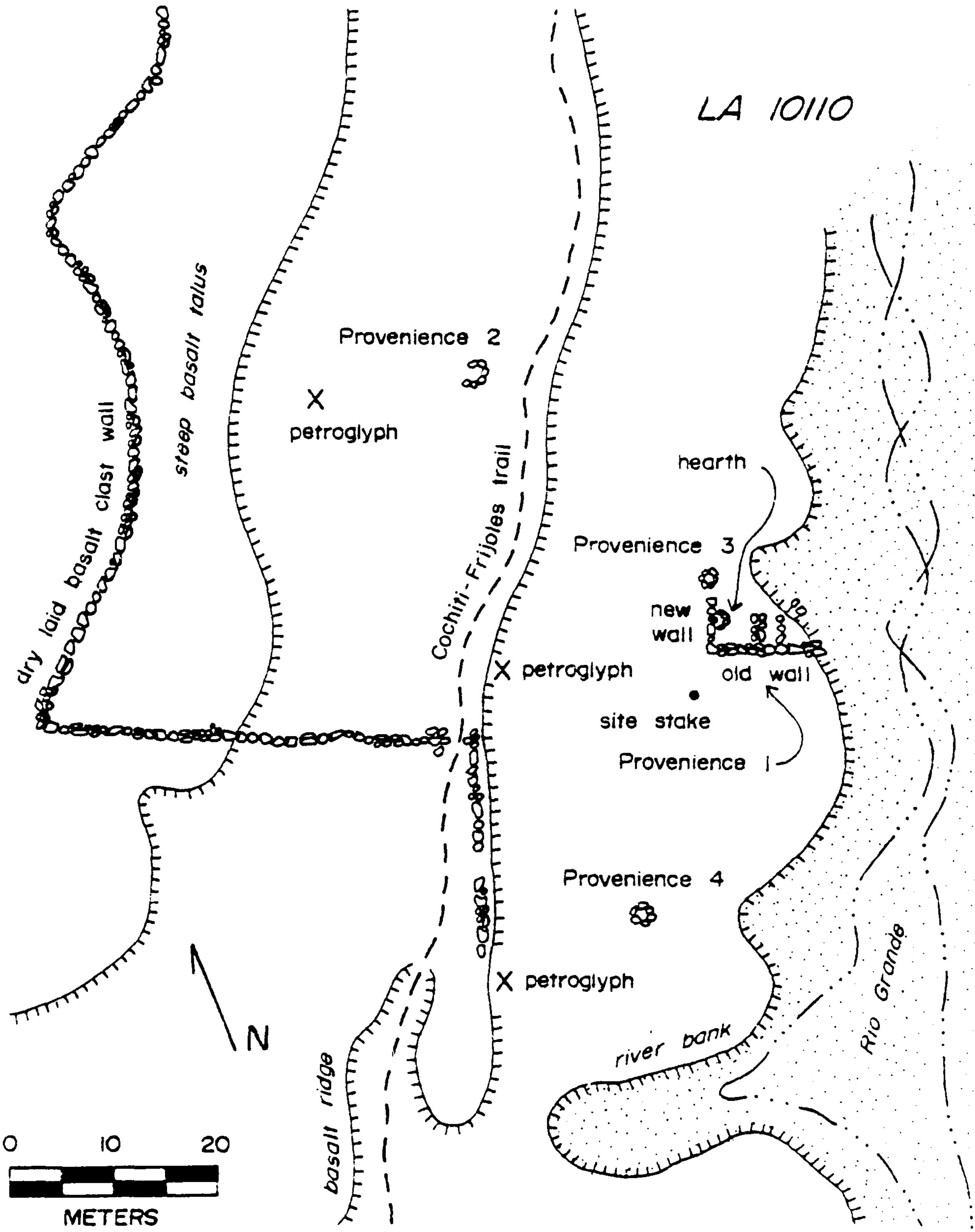


FIG. 9.13 LA 10110–Site Map

south and terminated in the river. The results of the testing suggest that the walls of the feature did not define a room-like structure, but rather were extensions of the extensive wall network noted at LA 9138. The testing and description of these walls follows below.

PROVENIENCE 1

Features

Wall A: This wall represents possible Spanish Colonial construction and association with the extensive wall systmes related to LA 9138. The wall was 15 meters in length, with its long axis running north-south. The south end of the wall terminated at the edge of the river.

The wall was constructed of unshaped semi-tabular basalt clasts averaging 20cm x 20cm x 20cm, although some elements ranged to 40cm in length. Elements were dry laid to a height which probably did not exceed 1.0 meter. The wall was two elements wide (60cm), laid side by side to form a flat surface on the interior and exterior of the wall. A 50cm test pit was excavated at the intersection of Walls A and B to determine their depth from surface. The basal elements of both walls were situated in sandy fill, 25cm to 30cm below present ground surface. Several test pits excavated at various intervals along Wall A indicate similar construction for its entire length. Very little artifactual material was recovered from the test pits, and all material was found in the top 10cm. The disturbed nature of the stratum where cultural material was recovered leaves its association to the wall unclear.

Wall B: The construction of this wall suggests that it was built at the same time as Wall A, and was probably also part of the extensive wall system associated with LA 9138.

Wall B was 4m long east-west and intersected Wall A perpendicularly. The eastern end of Wall B also terminated at the edge of the river. A very large juniper was growing at the intersection of Walls A and B, complicating interpretation of the association of these two walls. Wall B was greatly reduced and elements were probably taken for use in the construction of Wall C.

Construction of Wall B was similar to that of Wall A in that the elements were dry laid, two elements wide to form a relatively evenly faced wall averaging 60cm in width. The average element thickness was considerably smaller (10cm) and more tabular than those in Wall A. Approximately four courses of these elements remained beneath ground surface and extended to a depth of 25cm to 30cm. Both Walls A and B were constructed on the same ground surface, 25cm to 30cm below the present ground surface. The similarity of construction of these walls in terms of width, placement of elements and foundation suggests that they were constructed during the same time period.

Wall C: Construction of this wall suggests that it was built more recently than Walls A and B. Placement of a recent hearth (Provenience 3) adjacent to it indicates its possible use as a windbreak.

Wall C abutts Wall A, four meters north of and parallel to Wall B. It was constructed of wall elements removed from Walls A and B. It was 4m long and stood [illegible] in height. Small pits were excavated on opposite sides of the wall to determine foundation depth below surface. Tests indicated that the wall was constructed on the existing ground surface, unlike Walls A and B. A recent hearth (Provenience 3) with dimensions of 50cm x 90cm was located against the middle of Wall C. Construction of the wall with elements taken from Walls A and B and the association of the recent hearth suggest that the wall was built at a more recent date than Walls A and B.

Artifactual Materials

Artifactual material was recovered from the top 10cm of fill in the tested areas.

Ceramic Artifacts

A single sherd from an Espinoso G-P bowl was recovered.

Lithic Artifacts

Four pieces of debitage, three manufactured from a single taxon of chert (1051) and one from a taxon of chalcedony (1053), were recovered. One of the chert flakes was unidirectionally retouched on its ventral surface to form a projection. This tool exhibited bidirectional rounding and rotary wear along its shaft which indicates that the flake was used in a drill-like fashion.

Bone Artifacts

Bone artifacts were not recovered from the tested areas.

Historic Artifacts

A total of seventeen commercially-produced glass and metal artifacts was recovered during the testing of LA 10110. Fifteen items were fragments of a single cruet or vase. The remaining artifacts included a 22 caliber cartridge shell and a lid from a steel can.

TABLE 9.15

LA 10110–HISTORIC MATERIALS

PROV.	DESCRIPTION	NO.	DATE & REFERENCE
Prov. 1 level 0	very thin purple glass possibly from a cruet or tiny vase	8	1850-1914 (Kendrick 1970:57)
Prov. 1 level 1	22. cal. short cartridge casing	1	post 1863, pre 1940
	steel can lid from crimped seam	1	post 1900 (Fontana *et al.* 1962:72-73)
	very thin purple glass possibly from a cruet or tiny vase	7	1850-1914 (Kendrick 1970:57)

Fauna

The faunal remains recovered from LA 10110 consisted of seven mammalian bone fragments and a piece of shell. The shell was tentatively identified as a portion of a land snail (Keis, personal communication). The remaining faunal fragments indicated the presence of

a minimum of one domestic sheep (*Ovis* spp.) which was represented by a skull fragment. A second individual, a medium-sized mammal, was represented by rib, skull and long bone shank fragments.

SUMMARY

The results of limited testing in Provenience 1 indicate that the walls did not represent remnants of habitation structures. The similarity of construction for Walls A and B with an extensive wall network noted at LA 9138 may suggest that they were constructed in the 18th century although no artifactual materials dating to this period were recovered from the tests. Those materials which were monitored were too limited to suggest the character of any activities performed at the provenience. They do, however, provide evidence for a 20th century occupation of the provenience.

LA 10111

LA 10111 is a six provenience multicomponent Historic Period site. During survey it was described as an isolated architectural feature (a possible habitation room), several corrals, a lithic scatter and a series of petroglyphs. Only Provenience 1, which included the possible room, was tested. LA 10111 is located on the west side of the Rio Grande in White Rock Canyon approximately 900 meters north of the mouth of Drainage Basin No. 24. The site is situated on a terrace 15 meters west of the Rio Grande and extends approximately 100 meters along the river. The site is located in the Juniper vegetative community and lies at an elevation of 5280 ft. Junipers occurred frequently, both singly and in groups, with a general understory cover of grama grass, clumps of rabbitbrush and occasional snakeweed.

Methods of Excavation

Several test pits were excavated around the feature in Provenience 1. Initial testing consisted of facing a two meter section of an erosional cut, where the river had removed the eastern wall of the structure. Testing was continued westward 1.3m along the interior of the north wall, exposing this wall to a depth of 25cm below its footings. Another test was excavated into the erosional cut adjacent to the southern wall. Tests were excavated as one arbitrary unit (level 1) which encompassed two natural strata, a sandy alluvial stratum superimposed over a clay layer. A grid system was not placed over the site.

PROVENIENCE 1

Features

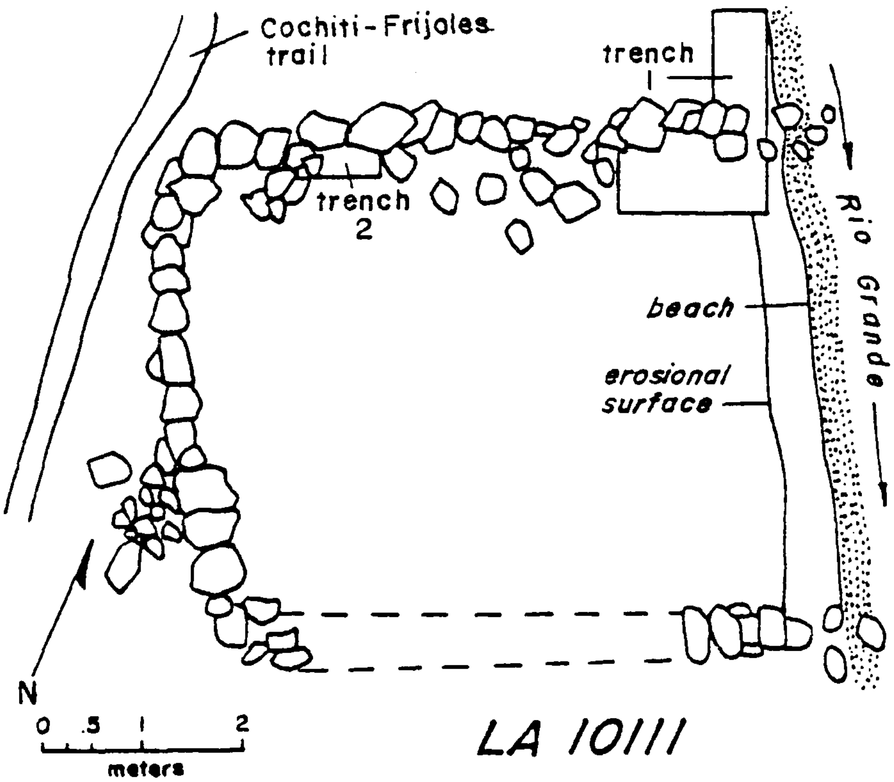


FIG. 9.14 LA 10111–Plan view of walls

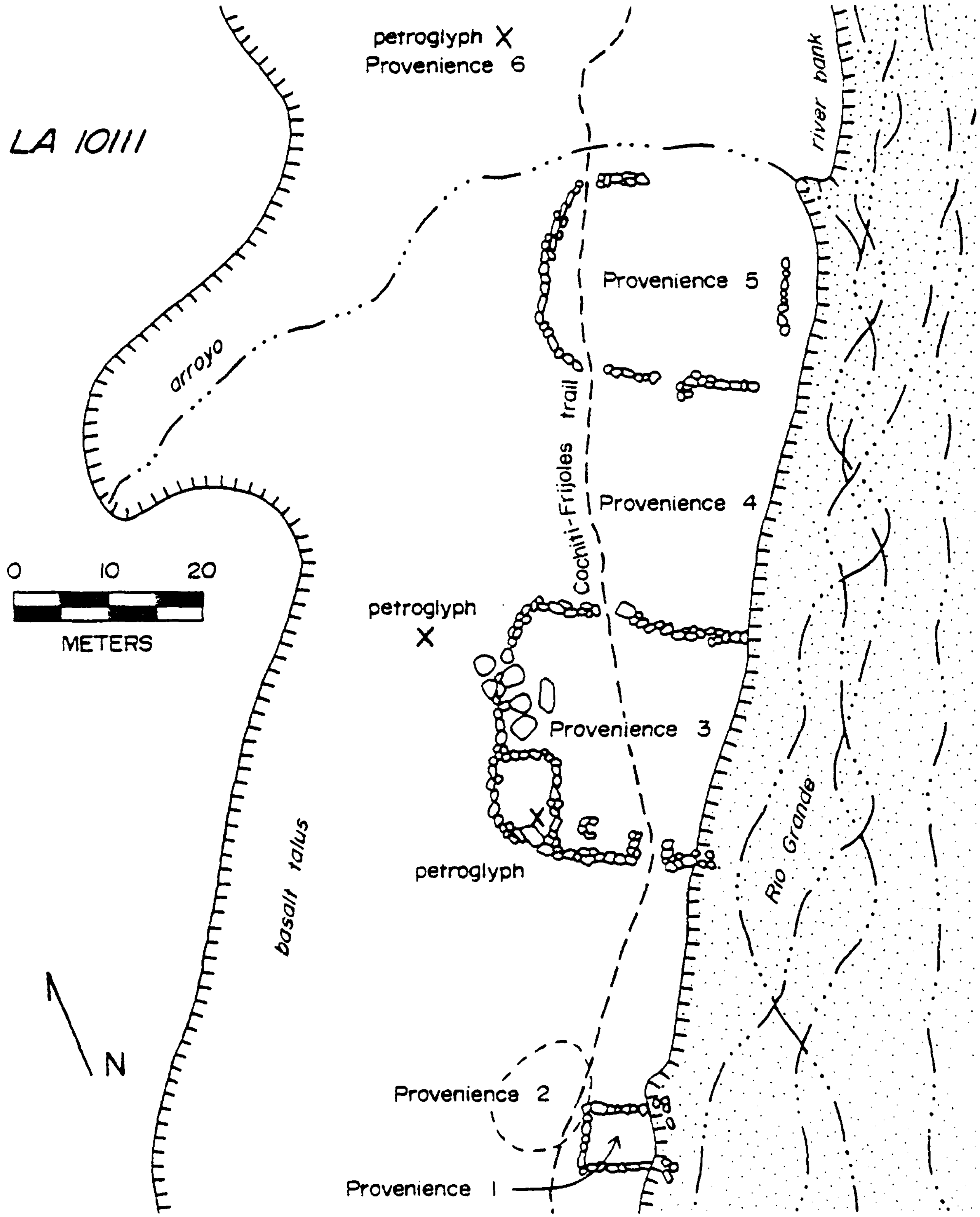


FIG. 9.15 LA 10111—Site Map

Wall Dimensions:

	Length	Width	Height
North	6.0m	.40m	.50m
South	5.0m	.40m	.50m
West	4.45m	.40m	.50m

All three walls, north, south and west, were similar in construction and built on ground level. Elements were unmodified, local basalt clasts and slabs averaging 20cm x 30cm x 20cm in size. Generally the larger elements with more even surfaces were used as foundation elements and laid horizontally with their long axes parallel to the long axes of the walls. Upper elements were more irregular in shape and placement. The walls were dry laid and two elements wide. At their maximum height (50cm), four irregular courses could be defined. The amount of rubble present on the surface and general low relief of the site area indicate the standing height of the wall elements probably never exceeded one meter. No chinking elements were found. The southwest and northwest corners were rounded and interlocking indicating that all walls were constructed at the same time.

Similar fill was found in test pits excavated inside and outside the enclosure. It consisted of a light sandy alluvium, homogeneous to a depth of 1.0 meter. At this point a clay stratum of unknown origin and averaging 3cm in thickness was found. This clay layer was beneath the current level of the river. A floor was not found. No cultural material was recovered. The walls present may indicate use of three walls for a corraling structure.

LA 12161

LA 12161 consisted of a single Spanish Colonial structure (Room 1) and an associated trash midden (Feature 1). The site was located on the west bank of the Rio Grande River, on an alluvial bench north of Medio Canyon, at an elevation of 5320 ft. LA 12161 was located in the Upper Sonoran Juniper vegetative community. Juniper, pinyon, oak and hackberry were dominant tree species in the vicinity of the site. Ground cover included cholla, prickly pear cactus and strawberry cactus. Some *Artemisia tridentata*, thistle, rice grass and rabbitbrush were observed. Wild grapes grew over old junipers along the river.

Methodology of Excavation

A grid pattern of 2m x 2m squares, which extended roughly 20 meters north-south and 20 meters east-west, was laid over the site area. This entire area was surface collected. The room, midden and gridded areas contiguous to the room and midden were excavated. The structure and midden were excavated in natural stratigraphic units; whereas the grids were excavated in arbitrary units within grid units.

Architecture

Room 1:

Shape: Rectangular surface structure.

Orientation: The long axis of the room was oriented 35 degrees west of true north. Exposure of the site location was south.

Condition: Room 1 had not been vandalized but the south wall was badly eroded.

Interior Room Dimensions:

	Length	Width	Height
North	3.30m	.57m to .70m	1.70m
South	3.60m	.39m	.40m
East	1.70m	.59m to .66m	.73m
West	2.20m	.29m to .51m	.83m

Walls: Diversity in wall construction was distinct enough to warrant separate descriptions of the south and east walls. The north and west walls were similar in construction and are described together.

North and West Walls: Any differences between these two walls will be mentioned below.

Type of Elements: Local basalt clasts.

Size of Elements: Basal elements ranged in size from 31cm x 30cm to 37cm x 9cm. Upper elements ranged from 50cm x 50cm to 60cm x 20cm.

Placement and Construction of Elements: Basal elements were unevenly laid horizontally at odd angles. The long axes of the middle elements corresponded to the long axes of the walls. Some upper elements were horizontally laid with the long axes perpendicular to the long axis of the wall, while others were horizontally laid with their long axes parallel to the long axis of the wall. Adobe mortar was used in wall construction. The east end of the north wall abutted a basalt outcrop.

Shaping of Elements: Unmodified.

Wall Facing: There was no consistency in wall facing. Some elements were placed such that flat surfaces were facing the interior of the structure, while others were unevenly placed.

Courses: The north wall was unevenly laid and generally one element wide.

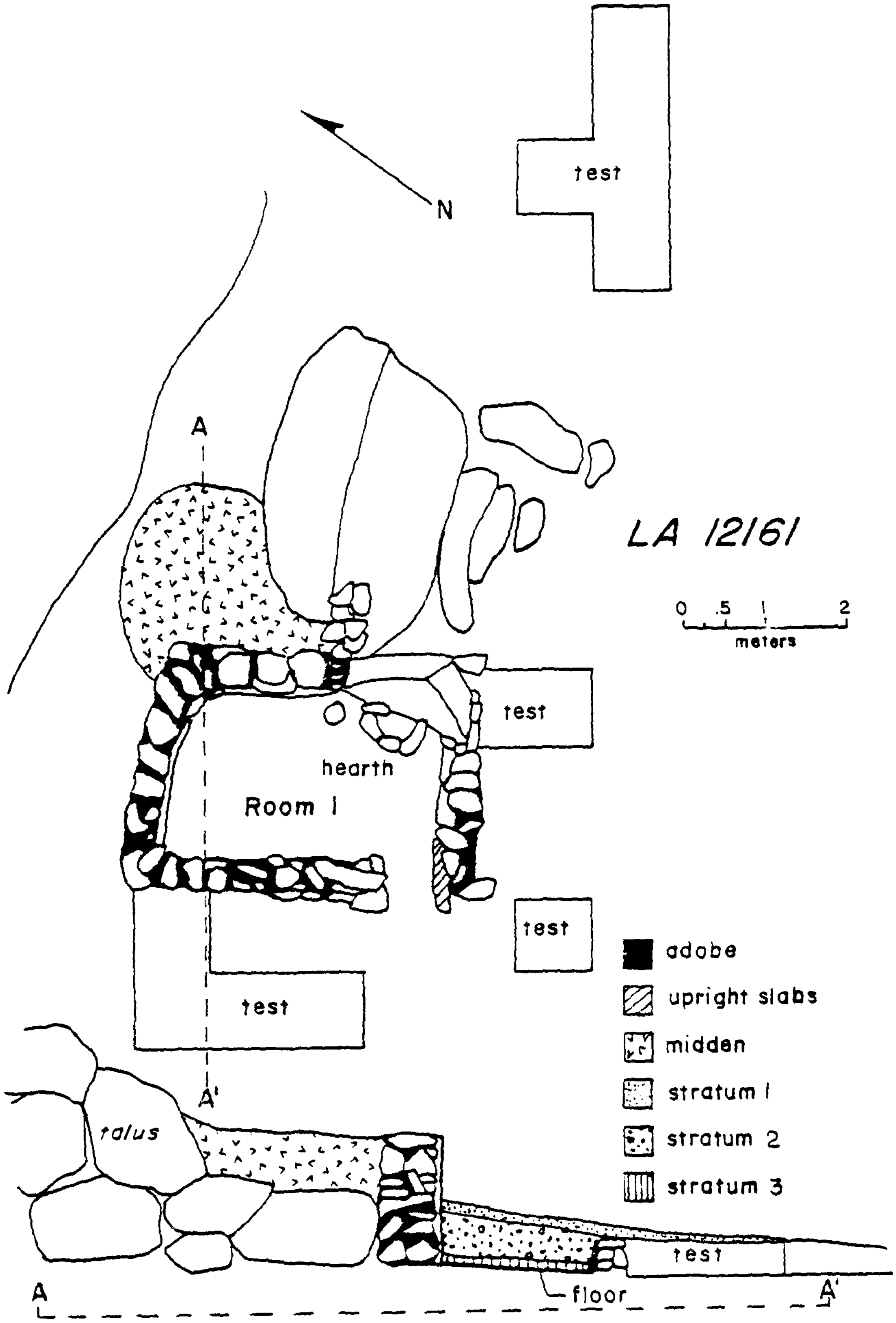


FIG. 9.16 LA 12161–Site Map with plan view and cross section of Room 1 and Midden

Chinking: No chinking was evident.

Corners: Corners were rounded and interlocking.

Plaster: A 1.0cm to 1.5cm thick layer of plaster was present on the interior wall surfaces.

South Wall:

Type of Elements: Local basalt boulders, clasts and slabs.

Size of Elements: Basal elements ranged in size from 31cm x 30cm to 37cm x 9cm. Upper elements, present only in the northwest corner, were smaller slabs averaging 24cm x 8cm in size.

Placement and Construction of Elements: The south wall was constructed of basalt boulders laid horizontally, vertically and at varying angles. Adobe mortar was used in the wall construction.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: The south wall was one element wide and evenly laid.

Chinking: No chinking was present.

Corners: Corners were rounded and interlocking.

Plaster: No plaster was evident.

East Wall:

Type of Elements: Local basalt boulders, clasts and slabs.

Size of Elements: The basal elements ranged in size from 18cm x 3cm to 79cm x 14cm.

Placement and Construction of Elements: Elements were laid horizontally, vertically and at all angles. Adobe mortar was used in the wall construction.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: The east wall was unevenly laid and one element wide.

Chinking: No chinking was present.

Corners: Corners were rounded and interlocking.

Plaster: No plaster was present.

Entrances: A floor level doorway was located in the southeast corner of the south wall. The entryway was 61cm wide and was faced on the east by a large basalt clast (88cm x 50cm x 8cm) and on the west by the placement of the wall elements.

Floors: The floor was partially eroded adobe, 3cm thick, which sloped to the south. It was not excavated into the ground surface. In some areas the floor was difficult to follow while in others it was well preserved and easily defined.

Roofing: No evidence of roofing was found.

Interior Features:

Hearth: A hearth was located against the north wall near the northeast corner and was abutted to the basalt outcrop. At floor level, the hearth was funnel-shaped and constructed of adobe and basalt clasts. The elements forming the east side of the hearth were laid vertically and measured 71cm x 45cm x 15cm from the floor. The west side measured 30cm x 25cm x 6cm. Hearth elements were underlain with adobe mud to the floor. The hearth measured 58cm from side to side, and was 57cm deep. Fine gray charcoal flecked ash comprised the fill. No artifactual material was recovered from the hearth.

Cist: A sub-floor circular cist measuring 26cm in diameter and 12cm deep was located west of the fireplace. It was apparently used in association with the floor occupation and later covered with adobe plaster. The cist contained a loose sandy ash fill. Several sherds were scattered throughout the cist fill.

Room Fill: There were three distinct stratigraphic layers in Room 1. Stratum 1, 9cm to 10cm, was a powdery sand fill. Stratum 2 varied in depth from 10cm to 70cm along the north wall, 10cm to 40cm in the southwest corner of the room, and from 10cm to 30cm along the east wall. This stratum of fill represented the bulk of deposition in the room and contained the wall fall. The soil matrix was sandy and charcoal flecked. Along the north wall, it appeared that material from the trash midden (Feature 1) had drifted into the room fill subsequent to the habitation of the room. Most of the artifactual material recovered from Stratum 2 came from the north wall area. However, scattered cultural debris was present throughout the room area. Some chunks of burned adobe and a thin dark lens of charcoal were found in the southwest corner of the room.

The third stratum was a 5cm thick layer of light colored sand overlying the floor. Sherds, bone and lithics were scattered throughout this stratum.

Rubble: A total of 6.8 cubic meters of rubble was measured from Room 1.

Exterior Fill: Exterior grids excavated around Room 1, with cultural material recovered included portions of G7, H5, I5, and I6. Cultural material included bone, lithics and sherds.

Exterior Features:

Midden: The midden, Feature 1, was located just on the exterior of the north wall of Room 1, and covered approximately 5 square meters. The midden was enclosed by basalt outcroppings, undoubtedly the reason for its preservation. The original ground surface sloped from north to south. The midden varied in depth from 75cm at its southern end, adjacent to the north wall of Room 1, to 40cm at its northern end. Numerous basalt spalls were present in the northern section, apparently deposited by colluvial wash from the talus slope directly to the north. Few such spalls were present in the southern part of the midden. Most of the artifactual material from LA 12161 was recovered from the midden area.

A test pit was initially excavated in the southeast corner of the midden against the house wall and revealed two strata. The upper stratum was comprised of 50cm

to 25cm of dense ash which overlay 25cm to 15cm of brown sand and rock ladden soil. The midden fill thinned out in this 25cm layer but cultural materials were present throughout. The entire midden was excavated.

Post: A juniper post was found directly southeast of Room 1. The post measured approximately 8cm in diameter, and had been set in a layer of existing fill, at a depth of 28cm below the present ground surface. The post appeared to have been cut with a metal axe.

Artifactual Assemblages

The artifactual materials recovered from LA 12161 were divided into five different samples: 1) upper fill in Room 1; 2) 5cm fill which directly overlay the floor; 3) fill in a test beneath the floor; 4) fill in the trash midden, and 5) surface and subsurface gridded areas outside the room and midden.

Room 1, Strata 1, 2

Cultural materials recovered from the upper fill in Room 1 (Strata 1 and 2) were collapsed into one analytical sample. These strata varied from 30cm to 70cm in depth and contained 6.8 cubic meters of wall fall. Some of this material, which was recovered in the vicinity of the north wall of the room, may have washed into the room from the trash midden after abandonment of the room. The highest density of artifactual debris came from the north wall area, although materials were recovered throughout the fill.

Ceramic Artifacts

A total of 328 sherds representing as many as 57 different vessels was recovered from the upper two strata. Fifty-one sherds from a minimum of 25 vessels were recovered from stratum I and 277 sherds from 36 vessels were found in stratum 2. Sherds from four vessels were found in both strata. Prehistoric P-III and P-IV wares, including Santa Fe B/W, Tularosa (?) B/W, San Clemente G-P and several unidentified glaze polychrome bowls and ollas, were represented by sixteen sherds, or 5% of the assemblage.

A variety of historic wares was recovered. These included: carbon polychromes (13% of the vessels); polished plainwares (38%); bisques, i.e. unfired or underfired pottery (11%); mineral painted wares (2%), and utility wares (36%). Two Glaze F vessels were recovered as well. Many of the vessels were only represented by one or two sherd fragments. Only a few carbon polychrome, polished plainware and utility wares were represented by as many as 43 sherds. Bowls, ollas and jars occurred roughly in equal frequencies.

Lithic Artifacts

A total of 261 lithic artifacts was recovered in the upper two strata in Room 1. The majority were debitage (84.4%) and small angular debris (10.3%). Three bifaces, one drill and one piece of large angular debris were also recovered.

1. Material Selection

Lithic artifacts were predominantly manufactured from obsidian (37.3%, 5 taxons), chalcedony (32.7%, 6 taxons), chert (16.4%, 5 taxons) and basalt (12.2%, 3 taxons). A total of 22 material taxons in all was presented, all of which are locally available within the study area.

2. Manufacture

Although no cores and only one piece of large angular debris were recovered from the upper fill, the amount of debitage and small angular debris for at least two obsidian taxons (3520, 3530), two taxons of basalt (3701, 3700), two taxons of chert (1051, 1090) and three taxons of chalcedony (1053, 1091, 1215) may represent by-products of routine manufacturing activity. Frequencies of cortical surfaces for all materials average about 27%. The majority of artifacts were manufactured through freehand detachment of debitage, although two flakes exhibited evidence of bipolar reduction.

3. Tool Utilization

Three bifaces and one drill were recovered from the fill. The drill and two of the bifaces exhibited utilization. Retouch or resharpening flakes of the same material taxon as the facially retouched artifacts were documented in addition to resharpening flakes from other material taxons. These latter indicate the possible use or manufacture of five more facially retouched artifacts.

Twenty-five pieces of debitage and small angular debris exhibited a total of 30 utilized edges. Eleven of these artifacts were chalcedony (13 edges), six were obsidian (7 edges), six were chert (8 edges) and two were basalt (2 edges). Nineteen of the utilized edges had been unidirectionally retouched, and one had been bidirectionally retouched into a projection. Of the 30 utilized edges, 11 were straight in outline shape, eight were concave-convex, five were concave, five convex, and one was a projection. Twenty-six of these edges exhibited either perpendicular or diagonal step fracture; eight exhibited both. Only four edges were characterized by bidirectional rounding.

Bone Artifacts

No bone artifacts were recovered from the upper fill in Room 1.

Historic Artifacts

Five pieces of metal and one light green colored glass fragment were recovered from the upper fill in Room 1. In the first stratum, one iron fragment and a possible "chispas" or strike-a-light was recovered. Two pieces of slag, a fragment of sheet coper and a fragment of glass were recovered from the second stratum.

Fauna

Fifty-five bone fragments were recovered from the upper fill in Room 1. The degree of specificity in identification of these bone varied greatly with the following breakdown: *Ovis* spp./*Capra* spp. (5 bones); *Ovis* spp., *Capra* spp./ or *Antilocapra* spp. (7 bones); Artiodactyla (10 bones); medium-large mammal (14 bones); large mammal (16 bones) and mammal (3 bones). These may represent only two different individuals, an *Ovis* spp./*Capra* spp. and an unidentified large mammal.

Room 1, Stratum 3.

The third stratum in Room 1 consisted of a 5cm layer of sand which overlaid the floor. Materials recovered

TABLE 9.16

LA 12161 ROOM 1, STRATA 1, 2—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	VITRIC TUFF (Nambe area)	VITRIC TUFF (N. Rio Grande)	VITRIC TUFF (Cochiti area)	BASALT SCORIA	GRANITE	AUGITE LATITE	HORNBLENDE LATITE	VITROPHYRE	BASALT	VOLCANIC SNADSTONE	CRUSHED SHERD	QUARTZITE	NO DATA	TOTAL
SANTA FE B/W	n.d.	2	–	–	–	–	–	–	–	–	–	–	–	–	2
TULAROSA (?) B/W	n.d.	–	–	–	–	–	–	–	–	–	–	–	–	1	1
UNID. CARBON/WHITE	n.d.	1	–	–	–	–	–	–	–	–	–	–	–	–	1
AGUA FRIA(?) G/R	n.d.	–	–	–	1	1	–	–	–	–	–	–	–	–	2
SAN CLEMENTE G-P	bowl	–	–	–	2	–	–	–	–	–	–	–	–	–	2
UNID. GLAZE-POLYCHROME	n.d.	–	–	–	1	–	5	–	2	–	–	–	–	–	8
KOTYITI G/R	bowl	–	–	–	–	–	–	8	–	–	–	–	–	–	8
	olla	–	–	–	–	–	–	7	–	–	–	–	–	–	7
CARBON POLYCHROME	hemis. bowl	6	–	1	–	–	–	–	–	–	–	–	–	–	7
	olla	11	34	–	–	–	–	–	–	–	–	–	–	–	45
MINERAL/WHITE	jar	–	–	–	–	–	–	–	–	–	–	–	–	3	3
REDWARE (polished)	bowl	3	4	–	–	–	–	–	–	1	–	–	–	–	8
	olla	28	3	–	–	–	–	–	–	–	19	–	–	39	89
BLACKWARE	bowl	–	–	–	–	–	–	–	–	–	10	–	–	–	10
	olla	1	–	1	–	–	–	–	–	–	–	–	–	–	2
PLAINWARE(polished, burnished interior)	jar	–	7	–	–	–	–	–	–	–	6	2	–	53	68
PLAINWARE (mica slip)	jar	–	–	–	–	1	–	–	–	–	–	–	3	–	4
PLAINWARE (unpolished)	bowl	–	–	–	–	–	–	–	–	–	18	–	–	–	18
	comal	–	–	–	–	–	–	–	–	–	1	–	–	–	1
"BRICKWARE" (red, friable)	jar	–	–	–	–	–	–	–	–	–	28	–	–	–	28
BISQUE	bowl	–	–	–	–	–	–	–	1	–	–	–	–	–	1
	olla	–	–	–	–	–	–	–	10	–	–	–	–	–	10
	n.d.	–	–	–	–	–	–	–	–	–	3	–	–	–	3
	TOTAL	52	48	2	4	2	5	15	13	1	85	2	3	96	328

from this stratum, in addition to those located within the two floor features, the hearth and the cist, may represent artifactual debris deposited during the immediate postabandonment habitation of the room. No artifacts, however, were recorded in direct association with the floor itself.

Ceramic Artifacts

Forty-four sherds representing a minimum of fifteen different vessels were recovered from the 5cm thick level of fill above the floor in Room 1. Types of vessels included carbon polychromes, plainwares (redwares, blackwares, and red-on-black wares), utility wares, bisque, mineral painted wares, Glaze F wares and one comale. These vessels were represented by one to nine sherds apiece.

An additional 41 sherds from three vessels were recovered from the hearth. These vessels included a friable red utility "brickware" jar (39 sherds), a polished plainware (1 sherd) and a GLaze F olla (1 sherd).

Lithic Artifacts

A total of 95 lithic artifacts were recovered from the hearth, cist and 5cm of fill above the floor in Room 1. Of these, 81.1% were debitage; 13.7% small angular debris. Three facially retouched artifacts were recovered as well: a gunflint, uniface and drill.

1. Material Selection

Eighteen different material taxons are represented. Chalcedony material taxons comprise the largest portion of the artifacts with four taxons and 43.2% of the assemblage, followed by obsidian (22.1%, 5 taxons), chert (20.0%, 5 taxons), basalt (10.5%, 3 taxons) and metarhyolite (2.1%, 1 taxon). The majority of these materials are locally available in the Cochiti study area.

2. Manufacture

The frequencies of cortical and noncortical debitage and small angular debris are low for most of the material taxons, although artifacts from one obsidian taxon (3530) and three chalcedony taxons (1053, 1040, 1091) could represent by-products of primary manufacture. No bipolar flakes were recovered.

3. Tool Utilization

Two facially retouched artifacts, one biface and one uniface, exhibited perpendicular step fracture on their ventral surfaces. Manufacture or use of two additional facially retouched artifacts was indicated by the presence of a resharpening flake and a retouch flake.

Seventeen pieces of debitage exhibited a total of 27 utilized edges. Five of these artifacts (6 edges) were obsidian; one was basalt (4 edges); four were chert (7

TABLE 9.17
LA 12161 ROOM 1, STRATA 1, 2–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, STRATA 1, 2													
Obsidian:	3520	34	8	–	–	–	–	–	–	–	–	–	42
	3523	8	–	1	–	–	–	–	1	–	–	–	10
	3524	3	–	–	–	–	–	–	–	–	–	–	3
	3525	7	–	–	–	–	–	–	–	–	–	–	7
	3530	31	3	1	–	–	–	–	1	–	–	–	36
Basalt:	3701	8	1	1	–	–	–	–	–	–	–	–	10
	3700	13	2	1	–	–	–	–	–	–	–	–	16
	3050	6	–	–	–	–	–	–	–	–	–	–	6
Chert:	1050	5	–	–	–	–	–	–	–	–	–	–	5
	1051	16	–	–	–	–	–	–	–	–	–	–	16
	1070	7	2	–	–	–	–	–	–	–	–	–	9
	1090	10	2	–	–	–	–	–	–	–	–	–	12
	1055	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	2	–	1	–	–	–	–	–	–	–	–	3
	1053	37	8	–	–	1	–	–	1	–	–	–	47
	1091	16	–	1	–	–	–	–	–	–	–	–	17
	1214	1	–	1	–	–	–	–	–	–	–	–	2
	1215	13	–	–	–	–	–	–	1	–	–	–	14
	1310	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	1	–	–	–	–	–	–	–	–	–	–	1
	4001	1	1	–	–	–	–	–	–	–	–	–	2
	1501	1	–	–	–	–	–	–	–	–	–	–	1
Totals:		222	27	7	0	1	0	0	4	0	0	0	261

edges); five were chalcedony (8 edges); and two were quartzite/jasperoid (2 edges). Eleven of the utilized edges had been unidirectionally retouched. Little diversity was exhibited in outline shape; no projections were observed. The majority of edges were either straight (10) or convex (10). The remaining edges were concave-convex (4) or concave (3).

All of the basalt edges exhibited bidirectional rounding with striations. The majority of cherts and jasperoids exhibited perpendicular and diagonal step fracture on the dorsal surface, whereas the chalcedonies exhibited perpendicular step fracture alone. The obsidian edges were characterized by perpendicular step fracture or diagonal feathers.

Bone Artifacts

Two utilized bone artifacts were recovered from the cist in Room 1. One tool exhibited a projection with a blunt tip characterized by rounding and polish (Class 1a). The second tool exhibited a highly concave edge with rounding and polish (Class 2a).

Historic Artifacts

Two pieces of slag were recovered from the fill which directly overlay the floor. Slag fragments were also collected from the upper fill in the room as well as the midden and gridded areas.

Fauna

A total of 117 bone fragments was recovered from the 5cm thick stratum which directly overlay the floor. As in levels 1 and 2, the specificity of identification varied greatly, as follows: *Ovis* spp./*Capra* spp. (5 bones); *Ovis* spp./*Capra* spp./*Antilocapra* spp. (17 bones); *Odocoileus* spp. (1 bone); *Equus asinus* (2 bones); Artiodactyla (37 bones); Artiodactyla or Perissodactyla (1 bone); *Bos* spp./*Bison* spp. (1 bone); medium-large mammal (10 bones) and large mammal (43 bones). These represent portions of a minimum of three different individuals.

Room 1, subfloor test (Stratum 4)

Materials recovered from a test below the floor are discussed below.

Ceramic Artifacts

Nineteen sherds representing a minimum of seven different vessels were recovered from the subfloor test. Two vessels were prehistoric wares, one Santa Fe B/W pot (1 sherd) and one unidentified carbon-on-white pot (2 sherds). The historic wares included one redware bowl (1 sherd), two plainwares with polished interiors (7 sherds) and two friable red utility "brickwares" (8 sherds).

TABLE 9.18

ROOM 1, STRATUM 3—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE		VITRIC TUFF (Nambe area)	VITRIC TUFF (N. Rio Grande)	PUMICE (Cochiti area)	HORNBLENDE LATITE	VOLCANIC SANDSTONE	BASALT and SHERD	NO DATA	TOTAL
KOTYITI G/R	olla	–	–	–	3	–	–	–	3
CARBON POLYCHROME	hemis. bowl	1	–	–	–	–	–	–	1
	olla	–	7	–	–	–	–	–	7
MINERAL/WHITE	jar	–	–	–	–	–	1	–	1
REDWARE R/B	olla	1	–	–	–	–	–	–	1
BLACKWARE	bowl	–	–	–	–	3	–	–	3
PLAINWARE (polished)	bowl	5	4	–	–	–	–	–	9
PLAINWARE (coarse, polished and burnished interior)	jar	–	–	–	–	4	–	9	13
PLAINWARE (unpolished)	comal	–	–	–	–	1	–	–	1
BISQUE	bowl	–	–	–	–	2	–	–	2
	olla	–	–	–	–	1	–	–	1
"BRICKWARE"	jar	–	39	–	–	–	–	–	39
"BRICKWARE" (red, friable)	jar	–	–	4	–	–	–	–	4
	TOTAL	7	50	4	3	11	1	9	85

TABLE 9.19

LA 12161

LA 12161 ROOM 1, STRATUM 4—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	VITRIC TUFF (Nambe area)	VITRIC TUFF (N. Rio Grande)	VOLCANIC SANDSTONE	PUMICE (Cochiti area)	NO DATA	TOTAL
SANTA FE B/W	n.d.	1	–	–	–	–	1
UNID. CARBON/WHITE	n.d.	–	2	–	–	–	2
PLAINWARE (polished)	bowl	1	–	–	–	–	1
PLAINWARE (coarse, polished, burnished interior)	jar	–	–	2	–	5	7
"BRICKWARE"	jar	–	–	3	5	–	8
	TOTAL	2	2	5	5	5	19

Lithic Artifacts

A total of 18 lithic artifacts was recovered from the test. The majority were debitage (72.2%) with the remainder small angular debris (27.8%). These artifacts were manufactured from twelve different material taxons which are, in general, available in the Cochiti study area. Four of the taxons were chalcedony (7 artifacts); five were obsidian (7 artifacts); two were basalt (2 artifacts); and one was jasperoid (1 artifact). The small frequencies of debitage and small angular debris do not indicate manufacturing activities. Only one edge of a piece of small angular debris exhibited use in the form of perpendicular step fracture.

Bone Artifacts

No bone artifacts were recovered from the subfloor test.

Historic Artifacts

Neither metal nor glass items were recovered from the subfloor test.

TABLE 9.20

LA 12161 ROOM 1, STRATA 3 and 4—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, STRATUM 3													
Obsidian:	3520	4	–	–	–	–	–	–	1	–	–	–	5
	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3524	1	–	–	–	–	–	–	–	–	–	–	1
	3525	4	–	–	–	–	–	–	–	–	–	–	4
	3530	8	2	–	–	–	–	–	–	–	–	–	10
Basalt:	3701	2	–	1	–	–	–	–	–	–	–	–	3
	3700	4	2	–	–	–	–	–	–	–	–	–	6
	3050	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1011	1	–	–	–	–	–	–	–	–	–	–	1
	1050	3	–	–	–	–	–	–	1	–	–	–	4
	1051	6	1	–	–	–	–	–	–	–	–	–	7
	1070	3	–	–	–	–	–	–	–	–	–	–	3
	1090	4	–	–	–	–	–	–	–	–	–	–	4
Chalcedony:	1052	2	–	–	–	–	–	–	–	–	–	–	2
	1053	9	2	–	–	–	–	–	–	–	–	–	11
	1091	8	3	–	–	–	–	–	–	–	–	–	11
	1215	13	3	1	–	–	–	–	–	–	–	–	17
	1090	–	–	–	–	–	–	–	1	–	–	–	1
Quartzite, Jasp.:	1052	2	–	–	–	–	–	–	–	–	–	–	2
Totals:		77	13	2	0	0	0	0	3	0	0	0	95
ROOM 1, SUBFLOOR TEST													
Obsidian:	3520	1	1	–	–	–	–	–	–	–	–	–	2
	3523	1	1	–	–	–	–	–	–	–	–	–	2
	3525	1	1	–	–	–	–	–	–	–	–	–	2
	3530	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	1	–	–	–	–	–	–	–	–	–	–	1
	3050	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	3	–	–	–	–	–	–	–	–	–	–	3
	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1215	–	1	–	–	–	–	–	–	–	–	–	1
	1310	1	1	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	1301	1	–	–	–	–	–	–	–	–	–	–	1
Totals:		13	5	0	0	0	0	0	0	0	0	0	18

Fauna

Only nine bone fragments were recovered from the subfloor test. None of the bones were identified as to genus or species level. They included two Artiodactyla bones, three medium-large mammal bones and four large mammal bones.

Miscellaneous

Two pieces of unmodified and unutilized crystal pumice were recovered from the subfloor test.

Feature 1

The midden was located along the exterior of the north wall of Room 1. It encompassed an area of approximately 5 sq. meters and varied in depth from 40cm to 75cm. Two strata were defined through the excavation of the midden, although variability among the cultural materials recovered will be treated as a single sample.

Ceramic Artifacts

The highest frequency of ceramic artifacts was recovered from the midden. One hundred seven different vessels were represented by 1562 sherds. Thirty of these sherds were prehistoric ceramics and included eight different Santa Fe B/W wares, three different carbon-on-white wares, three Glaze A red wares, three unidentified glaze polychrome wares, and one Blind Indented Corrugated jar. Some of these sherds had been worked. The remainder were historic wares and included similar types of vessels recovered from the fill of Room 1. These included 21 different carbon polychrome vessels, twenty-three different plainwares (redwares, blackwares, red-on-buff), 32 utility wares; 10 underfired "bisque" wares, two comales and two glaze F vessels. In general, the ratios of these different categories of vessels are similar to those recovered from the fill in the room. The major differences between the two assemblages is one of frequency rather than kind.

Lithic Artifacts

A total of 403 lithic artifacts was recovered from the midden. The majority of these were debitage (78.1%) and small angular debris (17.4%). Five bifaces, seven unifaces and one core were collected as well.

1. Material Selection

Lithic artifacts were predominantly manufactured from obsidian (46.5%, 6 taxons); chert (21.1%, 6 taxons); chalcedony (19.4%, 5 taxons) and basalt (7.0%, 3 taxons). The remaining 11 artifacts were manufactured from quartzite, quartz, jasperoid, metarhyolite and phaneric. These materials are locally available in the Cochiti study area.

2. Manufacture

Lithics from a minimum of thirteen materials may represent by-products of routine tool manufacturing activities. These included five taxons of obsidian (3520, 3523, 3524, 3525, 3530), one taxon of basalt (3700), three taxons of chert (1051, 1052, 1090), three taxons of chalcedony (1053, 1091, 1215) and one taxon of quartzite (4000). One core of chert (1050) and one piece of quartzite large angular debris (4000) were recovered. All of these taxons were characterized by high frequencies of cortical and noncortical debitage and small angular debris. Five bipolar flakes were recovered.

3. Tool Utilization

Eight of the eleven facially retouched artifacts exhibited tool use; seven of these were unifacially retouched. Characteristic wear patterns were diagonal or perpendicular step fracture, although the biface exhibited diagonal feathered scars. Manufacture and possible use of five additional facially retouched artifacts are indicated by the presence of retouch or resharpening flakes from two taxons of obsidian, two taxons of basalt and one taxon of chert.

A total of 67 edges from 50 lithic artifacts exhibited use. Eleven of the utilized artifacts were obsidian; six were basalt; 19 chert; 10 chalcedony, and four were from other materials. Thirty-six of these edges had been retouched. The edges exhibited a considerable diversity in outline shape, although none were projections. Twenty-two of the edges were straight, 18 were convex, 17 were concave, and 10 were concave-convex. Most of the utilization was characterized by microscarring including perpendicular or diagonal step fracture, nibbling and diagonal feathers. Only the basalt edges exhibited high frequencies of rounding, both unidirectional and bidirectional. Polish and striations frequently were associated with the rounding. Considerable diversity in wear patterns were thus evident within the assemblage, which were indicative of both scraping and sawing activities.

Bone Artifacts

Thirty-five bone artifacts were recovered in the trash midden. Seven classes and subclasses were represented, indicating at least four different activities: skinning; hide preparation; sewing; and the use of a leather punch or cutter.

Eight pieces of utilized bone which exhibited projections with a blunt tip and rounding and polish on the tip of the projection alone (Class 1a tools) were recovered. The character of the wear patterns from these tools suggests use for making holes in a soft pliable material. One of these Class 1a tools is represented by an antler fragment. Polish can be seen on the unmodified antler tip (a photograph of this tool appears in Chapter 6). All other Class 1a implements were long bone shaft fragments. One similar tool was recovered in Room 1.

One Class 1b utilized long bone shaft fragment was recovered from the midden. It was characterized by a projection with rounding on its tip and polish and striations extending along the shaft of the implement, suggesting possible use as a needle.

Class 2a tools included two utilized bone fragments. These tools exhibit edge sharpening on a highly concave edge with rounding and polish on the utilized edge. Striations are parallel to the longitudinal axis of the bone, which may imply use in the skinning process. All of these tools are long bone shaft fragments. Highly concave edges can easily be found in the fragments produced in marrow cracking. A similar tool was found in the cist in Room 1.

Class 2b was represented by two implements (photographs of these tools appear in Chapter 6). This tool

type is similar to Class 2a in that it reflects similar use.

Sixteen Class 3 tools with straight to slightly convex edges were recovered. Utilization is evidenced by rounding, polish and striations which are perpendicular to the edge margin. The wear patterns suggest use in hide preparation. All were long bone shaft fragments.

Four Class 4 bone fragments with polish extending over the outer surface of the fragments were recovered. Implication of function for these fragments has not been determined at this time.

A single Class 5 antler fragment which was grooved and snapped was recovered. Due to its poor condition, its size and shape could not be determined. It is pictured in Chapter 6. Its function is unknown.

One highly modified bone tool was recovered from LA 12161. It was whittled from a large mammal, probably *Bos* spp./*Bison* spp., long bone shaft fragment. All surfaces exhibited polish and striations perpendicular to the tool's longitudinal axis. This tool is pictured in Chapter 6. At this time the function of this tool is unknown. It measured 92mm in length, 14mm in width and 8mm in thickness.

Historic Artifacts

Only four pieces of metal and one fragment of glass were recovered from the midden area. These included one iron hook, one hand-forged square nail, one piece of slag, a square iron rod fragment and a piece of green glass.

Fauna

A total of 320 bone fragments from a minimum of five different types of individuals were recovered from the trash midden. The degree of specificity in identification varied from species to class, as follows: *Ovis* spp./*Capra* spp. (44 bones); *Ovis* spp./*Capra* spp./*Antilocapra* spp. (128 bones); *Antilocapra* spp. (1 bone); *Odocoileus* spp. (3 bones); *Bos taurus* (2 bones); *Equus* spp. (2 bones); *Bos* spp./*Bison* spp. (1 bone); bird - turkey size (1 bone); bird - mallard size (1 bone); medi-

TABLE 9.21
LA 12161 MIDDEN—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	VITRIC TUFF (Nambe area)	VITRIC TUFF (N. Rio Grande)	PUMICE (Cochiti area)	VOLCANIC SANDSTONE	QUARTZ with SHERD	BASALT SCORIA	BASALT with SHERD	AUGITE LATITE	HORNBLENDE LATITE	CRUSHED SHERD	VITROPHYRE	GRANITE	QUARTZITE	MICA SCHIST	NO DATA	TOTAL
SANTA FE B/W	n.d.	2	–	3	1	1	–	–	–	–	–	–	–	–	–	3	10
AGUA FRIA G/R	n.d.	–	–	–	–	–	6	1	1	–	–	–	–	–	–	–	8
BLIND INDENTED CORRUGATED	jar	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	2
KOTYITI G/R	bowl	–	–	–	–	–	–	–	–	17	–	–	–	–	–	–	17
	olla	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	3
UNID. GLAZE POLYCHROME	n.d.	–	–	–	–	–	2	–	1	4	–	–	–	–	–	–	7
CARBON POLYCHROME	hemis. bowl	40	56	2	–	–	–	–	–	–	–	–	–	–	–	–	98
	carin. bowl	5	–	–	–	–	–	–	–	–	1	–	–	–	–	–	6
	bowl	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
	olla	47	21	–	–	–	–	–	–	–	–	–	–	–	–	–	68
	soup plate	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	3
UNID. CARBON/WHITE	n.d.	1	–	–	1	–	–	–	–	–	–	–	–	–	–	1	3
REDWARE R/B	olla	67	61	2	9	–	–	–	–	–	–	–	–	–	–	2	141
RED/BUFF	soup plate	3	–	4	–	–	–	–	–	–	–	–	–	–	–	–	7
BLACKWARE	bowl	–	–	–	6	–	–	–	–	–	–	–	–	–	–	–	6
	olla	2	–	–	–	–	–	–	–	–	1	–	–	–	–	–	3
	ring base	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11
PLAINWARE (coarse, polished, burnished interior)	jar	–	1	54	267	–	–	2	–	–	–	15	1	–	–	162	502
PLAINWARE (polished)	bowl	24	2	–	3	–	–	8	–	–	–	5	–	–	–	–	37
	jar	–	21	–	–	–	–	–	–	–	–	2	–	–	–	–	23
PLAINWARE (with mica slip)	jar	–	–	–	1	–	–	–	–	–	–	55	–	11	1	–	68
PLAINWARE (coarse, unpolished)	jar	–	–	7	86	–	–	–	–	–	–	26	1	–	–	10	130
PLAINWARE (unpolished)	comal	–	–	–	119	–	–	–	–	–	–	–	–	–	–	–	119
	n.d.	–	—	–	4	–	–	–	–	–	–	–	–	–	–	–	4
BISQUE	flared bowl	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	3
	bowl	–	–	–	99	–	–	–	–	–	–	–	–	–	–	–	99
	olla	–	–	–	60	–	–	–	–	–	–	–	–	–	–	–	60
	n.d	–	–	–	25	–	–	–	–	–	–	–	–	–	–	–	25
BRICKWARE	jar	–	–	6	86	–	–	–	–	–	–	1	–	–	–	–	93

TABLE 9.22
LA 12161 MIDDEN–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
TRASH MIDDEN													
Obsidian:	3520	67	19	–	–	–	–	–	1	–	–	–	87
	3523	14	3	1	–	–	–	–	–	–	–	–	18
	3524	10	2	–	–	–	–	–	1	–	–	–	12
	3525	14	4	1	–	–	–	–	–	–	–	–	19
	3530	37	8	1	–	–	–	–	1	–	–	–	47
	3510	3	–	–	–	–	–	–	–	–	–	–	3
Basalt:	3701	6	1	1	–	–	–	–	–	–	–	–	8
	3700	16	–	2	–	–	–	–	–	–	–	–	18
	3050	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1011	2	–	–	–	–	–	–	–	–	–	–	2
	1050	17	5	1	1	–	–	–	–	–	–	–	24
	1051	27	6	–	–	–	–	–	3	–	–	–	36
	1070	4	–	–	–	–	–	–	–	–	–	–	4
	1090	12	5	–	–	–	–	–	1	–	–	–	18
	1400	1	–	–	–	–	–	–	1	–	–	–	2
	1430	–	–	–	–	–	–	–	1	–	–	–	1
Chalcedony:	1052	3	1	–	–	–	–	–	–	–	–	–	4
	1053	30	4	–	–	–	–	–	–	–	–	–	34
	1091	12	2	–	–	–	–	–	–	–	–	–	14
	1215	20	2	–	–	–	–	–	2	–	–	–	24
	1310	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	7	2	–	–	1	–	–	–	–	–	–	10
	4001	2	1	–	–	–	–	–	–	–	–	–	3
	1501	5	1	–	–	–	–	–	–	–	–	–	6
	1502	1	3	–	–	–	–	–	–	–	–	–	4
Granite & Ands.:	3020	–	1	–	–	–	–	–	–	–	–	–	1
Trash Midden Totals:		314	69	7	1	1	0	0	11	0	0	0	403

um-large mammal (15 bones); large mammal (35 bones); large mammal - larger than *Ovis* spp. (7 bones); large mammal - not *Bos* spp. size (? bones); large mammal - *Bos* spp. size (8 bones), and m mmal (2 bones). A majority of the skull and tooth elements recovered from the site as a whole were collected from the midden. High proportions of Artiodactyla and large mammal scapula were recovered from the midden as well. Several of these bones exhibited gnawing.

Flotation Sample

A 1.0 liter volume of fill from a level 20cm to 25cm deep in the midden was subjected to flotation analysis. Only two seeds, one which could not be identified as to species, and another identified as a *Portulaca* seed, were found. *Portulaca* (purslane or pursley) is a low-growing succulent plant. It is palatable to man and beast even when mature (in seed).

A considerable amount of nonbotanical remains were present. These included insect parts: insect cocoons and eggs; feces (right size for small rodents), and two white snail shells. Also present were many juniper twig segments (cf. *Juniperus monosperma* or *J. osteosperma*). These were of various ages and some were obviously modern. None were burned. These may have been deposited recently or over a span of years.

This sample produced a relatively high amount of floated material (30% of original dirt sample). Ordinarily one would expect many more seeds than were act ally present. Original sample (before floating) consisted mostly of gravel, charcoal and modern roots (very little soil). Dumped residue from the floating process contained flakes, burnt bone, eggshell and other culturally associated materials.

Exterior Grids

A system of 2m x 2m grids was superimposed over the site with the grids extending roughly 20m north-south and 20m east-west. Collections were made from the surfaces of 103 grid units. Subsurface tests in portions of six grid units (G5, H5, I5, F10, F11 and G10) were made as well.

Z-score distributions were computed for all materials collected from the grids, surface and subsurface. With the exception of grid F10, the highest density cluste

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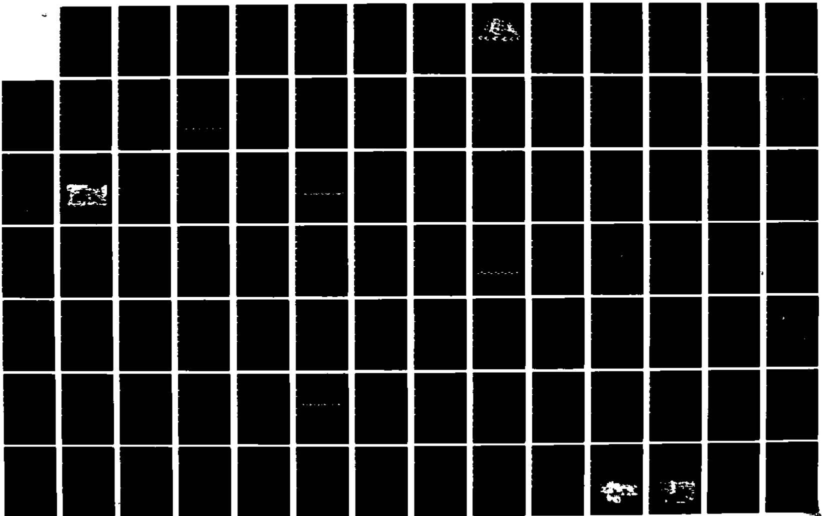

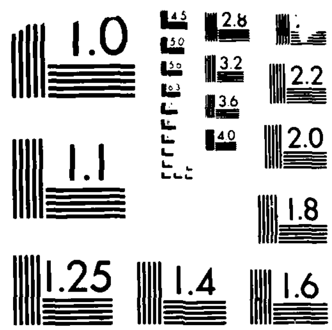

MICROCOPY RESOLUTION TEST CHART
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TABLE 9.22
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TRASH MIDDEN													
Obsidian:	3520	67	19	–	–	–	–	–	1	–	–	–	87
	3523	14	3	1	–	–	–	–	–	–	–	–	18
	3524	10	2	–	–	–	–	–	1	–	–	–	12
	3525	14	4	1	–	–	–	–	–	–	–	–	19
	3530	37	8	1	–	–	–	–	1	–	–	–	47
	3510	3	–	–	–	–	–	–	–	–	–	–	3
Basalt:	3701	6	1	1	–	–	–	–	–	–	–	–	8
	3700	16	–	2	–	–	–	–	–	–	–	–	18
	3050	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1011	2	–	–	–	–	–	–	–	–	–	–	2
	1050	17	5	1	1	–	–	–	–	–	–	–	24
	1051	27	6	–	–	–	–	–	3	–	–	–	36
	1070	4	–	–	–	–	–	–	–	–	–	–	4
	1090	12	5	–	–	–	–	–	1	–	–	–	18
	1400	1	–	–	–	–	–	–	1	–	–	–	2
	1430	–	–	–	–	–	–	–	1	–	–	–	1
Chalcedony:	1052	3	1	–	–	–	–	–	–	–	–	–	4
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	1091	12	2	–	–	–	–	–	–	–	–	–	14
	1215	20	2	–	–	–	–	–	2	–	–	–	24
	1310	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	7	2	–	–	1	–	–	–	–	–	–	10
	4001	2	1	–	–	–	–	–	–	–	–	–	3
	1501	5	1	–	–	–	–	–	–	–	–	–	6
	1502	1	3	–	–	–	–	–	–	–	–	–	4
Granite & Ands.:	3020	–	1	–	–	–	–	–	–	–	–	–	1
Trash Midden Totals:		314	69	7	1	1	0	0	11	0	0	0	403

um-large mammal (15 bones); large mammal (35 bones); large mammal - larger than *Ovis* spp. (7 bones); large mammal - not *Bos* spp. size (2 bones); large mammal - *Bos* spp. size (8 bones), and mammal (2 bones). A majority of the skull and tooth elements recovered from the site as a whole were collected from the midden. High proportions of Artiodactyla and large mammal scapula were recovered from the midden as well. Several of these bones exhibited gnawing.

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This sample produced a relatively high amount of floated material (30% of original dirt sample). Ordinarily one would expect many more seeds than were actually present. Original sample (before floating) consisted mostly of gravel, charcoal and modern roots (very little soil). Dumped residue from the floating process contained flakes, burnt bone, eggshell and other culturally associated materials.

Exterior Grids

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Z-score distributions were computed for all materials collected from the grids, surface and subsurface. With the exception of grid F10, the highest density clusters

of materials were found adjacent to either the room or midden areas.

Ceramic Artifacts

A total of 400 sherds from as many as 126 different vessels was recovered from the grids at LA 12161. They were collected from 31 of the 103 grid units with the highest densities in five noncontiguous grids: F11, G6, G10, I5, and J6. With the exception of grid J6, the other grid units exhibited high frequencies of lithic artifacts as well. The high densities of ceramic artifacts in grids F11 and G10, which lie several meters to the northeast of Room 1, reflect the breakage of a single vessel each, a prehistoric Blind Indented Corrugated jar in G10 (32 sherds) and an historic plainware with a polished interior in F11 (63 sherds). The densities in G7, I5 and J6, however, reflect the breakage of several different vessels. Sherds from I5, in particular, reflect a minimum of 41 different pots, but only seven vessels are represented by as many as seven sherds; only one of these vessels, a plainware utility jar with a polished interior, was characterized by 32 sherds.

The ceramic vessels collected from the grids exhibited a greater diversity in type than those recovered in the room and midden areas. Included were several different Ogapoge Polychrome, Salinas Red, carbon-on-white, carbon red, carbon black-on-red, carbon polychrome, mineral white, mineral brown plainware and

TABLE 9.23

LA 12161 EXTERIOR GRIDS—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	VITRIC TUFF (Nambe area)	VITRIC TUFF (N. Rio Grande)	PUMICE (Cochiti area)	BASALT SCORIA	BASALT with SHERD	DIABASE BASALT	HORNBLENDE LATITE	VOLCANIC SANDSTONE	AUGITE LATITE	GRANITE	SAND with SHERD	VITROPHYRE	NO DATA	TOTAL
WIYO B/W	bowl	–	–	1	–	–	–	–	–	–	–	–	–	–	1
ABIQUIU B/G	bowl	–	1	–	–	–	–	–	–	–	–	–	–	–	1
	n.d.	–	2	–	–	–	–	–	–	–	–	–	–	–	2
AGUA FRIA(?) G/R	olla	–	–	–	2	–	–	–	–	–	–	–	–	–	2
	n.d.	–	–	–	1	–	–	–	–	–	–	–	–	–	1
BLIND INDENTED CORR.	jar	–	–	32	–	–	–	–	–	–	–	–	–	–	32
CLAPBOARD	jar	–	–	–	–	–	–	–	1	–	–	–	–	–	1
KOTYITI G/R	carin. bowl	–	–	–	–	–	–	1	–	–	–	–	–	–	1
	bowl	–	–	–	–	–	–	3	–	–	–	–	–	–	3
	olla	–	–	–	–	–	–	1	–	–	–	–	–	–	1
	n.d.	–	–	–	–	–	–	2	–	2	–	–	–	–	4
OGAPOGE POLYCHROME	bowl	2	1	–	–	–	–	–	–	–	–	–	–	–	3
	olla	8	–	–	–	–	–	–	–	–	–	–	–	–	8
	jar	1	–	–	–	–	–	–	–	–	–	–	–	–	1
"TEWA" RED	bowl	1	–	–	–	–	–	–	–	–	–	–	–	–	1
"TEWA" BUFF	bowl	–	1	–	–	–	–	–	–	–	–	–	–	–	1
CARBON POLYCHROME	hemis. bowl	4	2	–	–	–	–	–	–	–	–	–	–	–	6
	carin. bowl	1	–	–	–	–	–	–	–	–	–	–	–	–	1
	bowl	3	–	–	–	–	–	–	–	–	–	–	–	–	3
	olla	4	2	–	–	–	–	–	–	–	–	–	–	–	6
	jar	–	1	–	–	–	–	–	–	–	–	–	–	–	1
	soup plate	2	–	–	–	–	–	–	–	–	–	–	–	–	2
	n.d.	–	–	1	–	–	–	–	–	–	–	–	–	–	1
CARBON/WHITE	bowl	–	1	2	–	–	–	–	–	–	–	–	–	–	3
	olla	8	4	2	–	–	–	–	–	–	–	–	–	–	14
	n.d.	–	1	–	–	–	–	–	–	–	–	–	–	–	1
CARBON/RED	jar	1	–	1	–	–	–	–	–	–	–	–	–	–	2
PUNAME POLYCHROME	bowl	–	–	1	–	–	–	–	–	–	–	–	–	–	1
MINERAL/WHITE	n.d.	–	–	–	–	2	–	–	–	–	–	–	–	–	2
MINERAL/RED	bowl	–	–	1	–	–	–	–	–	–	–	–	–	–	1
MINERAL/BROWN	n.d.	–	–	1	–	–	–	–	–	–	–	–	–	–	1
SALINAS RED	n.d.	–	–	–	–	–	–	6	–	–	–	–	–	–	6

TABLE 9.23 (con't)

		VITRIC TUFF (Nambe area)	VITRIC TUFF (N. Rio Grande)	PUMICE (Cochiti area)	BASALT SCORIA	BASALT with SHERD	DIABASE BASALT	HORNBLENDE LATITE	VOLCANIC SANDSTONE	AUGITE LATITE	GRANITE	SAND with SHERD	VITROPHYRE	NO DATA	TOTAL
REDWARE (polished)	hemis. bowl	–	–	–	–	–	–	–	6	–	–	–	–	–	6
	bowl	–	–	–	–	–	1	1	4	–	–	–	–	–	6
	olla	3	4	–	–	–	–	–	1	–	–	–	–	–	8
	jar	–	2	1	–	–	–	–	3	–	–	–	–	–	6
	n.d.	10	–	–	–	–	–	–	–	–	–	–	–	–	10
BUFFWARE (polished)	bowl	–	–	–	–	1	–	–	–	–	–	–	–	–	1
	olla	4	2	–	–	–	–	–	–	–	–	–	–	–	6
	jar	3	–	–	–	–	–	–	–	–	1	–	–	–	4
	soup plate	–	–	–	–	–	–	–	1	–	–	–	–	–	1
	n.d.	21	2	1	–	–	–	–	2	–	–	–	–	–	26
RED/BUFF	hemis. bowl	12	–	–	–	–	–	–	–	–	–	–	–	–	12
	bowl	–	1	–	–	–	–	–	–	–	–	–	–	–	1
WHITEWARE (polished)	footed cup/bowl	–	–	–	–	2	–	–	–	–	–	–	–	–	2
	olla	–	–	1	–	–	–	–	–	–	–	–	–	–	1
	n.d.	–	–	–	–	–	–	–	–	2	–	–	–	–	2
BLACKWARE (polished)	jar	–	–	–	–	–	–	–	–	–	3	–	–	–	3
	n.d.	8	–	–	–	–	–	–	1	–	3	–	–	1	13
GLAZE (?)/WHITE	olla	–	–	–	–	–	–	–	–	–	–	1	–	–	1
UNID. GLAZE/RED	olla	–	–	–	–	1	–	–	–	–	–	–	–	–	1
RED/WHITEWARE	bowl	1	–	–	–	–	–	–	–	–	–	–	–	–	1
	soup plate	–	–	–	–	2	–	–	–	–	–	–	–	–	2
	n.d.	–	–	–	–	1	–	–	–	–	–	–	–	–	1
PLAINWARE (polished interior)	jar	–	–	–	–	–	–	–	75	–	–	–	2	–	77
	n.d.	–	–	–	–	–	–	–	37	–	–	–	1	9	47
PLAINWARE (scored)	jar	–	–	–	–	–	–	–	1	–	–	–	–	–	1
PLAINWARE (unpolished)	bowl	–	–	–	–	–	–	–	7	–	–	–	–	–	7
	jar	–	–	6	–	–	–	1	5	–	–	–	–	–	12
	comal	–	–	–	–	–	–	–	7	–	–	–	–	–	7
	n.d.	–	–	3	–	–	–	–	4	–	–	–	–	–	7
UTILITY (interior white slip)	n.d.	–	–	–	–	–	–	–	3	–	–	–	–	–	3
"BRICKWARE"	n.d.	–	–	–	–	–	–	–	11	–	–	–	–	–	11
	TOTAL	97	27	54	3	9	1	15	169	4	7	1	3	10	400

utility ware vessels. These vessels were, in general, represented by only a few sherd fragments each.

Lithic Artifacts

A total of 410 lithic artifacts was recovered from 48 of the 103 grid units, resulting in a density of 7.9 artifacts per sq. meter for those grids exhibiting lithic artifacts and a density of 3.7 artifacts per square meter for the provenience as a whole. Clusters of higher density lithics are found in grids G7, G10 and I5; lower density clusters are found in C1, J3, K4, H8 and I9. With the exception of materials from G10, the highest density materials are adjacent to either the room or trash midden.

The majority of the lithic artifacts are debitage (79.4%) and small angular debris (12.2%). Facially retouched artifacts included one biface, two gunflints and one drill. One core, four pieces of large angular debris, a notched axe and an axe blank were recovered as well.

1. Material Selection

A total of 26 different material taxons was represented from the lithics recovered from the grid units. Of these, 39.9% were obsidian (3 taxons); 29.0% chalcedony (7 taxons); 20.2% basalt (4 taxons); 6.7% chert (5 taxons); 4.3% were quartzite, quartz, jasperoid, sandstone and granites. The majority of these materials were locally available in the Cochiti study area.

2. Manufacture

Although the amount of debitage and small angular debris was sufficient to suggest manufacture for 10 of the 26 material taxons present, the frequencies of material exhibiting cortical surfaces were low, especially for

the obsidian taxons which account for 40% of the total assemblage for this provenience. A few additional materials indicative of manufacturing activities include one basalt core (3050), and four pieces of large angular debris - two chert (1051), one chalcedony (1052) and one basalt (3700). With the exception of the chalcedony large angular debris, these larger artifacts have been manufactured from different material taxons than those characterized by large frequencies of debitage. It can thus be suggested that although manufacturing activities were undertaken within the provenience locale, substantial evidence of primary stages of decortication is not apparent. With the exception of two bipolar flakes, the reduction technique employed for the remaining materials appears to have involved freehand detachment of debitage.

3. Tool Utilization

Four facially retouched artifacts, one biface, one drill and two gunflints exhibited utilization on at least one edge. Sixteen resharpening flakes and five retouch flakes were recovered from nine different material taxons, and may be indicative of either manufacture or utilization of a minimum of five additional facially retouched artifacts.

Fifty-five pieces of debitage and small angular debris exhibited a total of 62 utilized edges. Of these edges, 31 had been unidirectionally retouched, two were bidirectionally retouched. Twenty of these artifacts were obsidian (20 edges; 10 retouched); 11 were basalt (14 edges; 9 retouched); three chert (3 edges; one retouched); 15 were chalcedony (18 edges; 7 retouched); six from other materials (seven edges; three retouched). A considerable diversity in wear patterns is exhibited within the assemblage. Thirty-five edges exhibited perpendicular step fracture; 20 diagonal step fracture; 12, bidirectional rounding (three of these were projections); the remaining edges exhibited unidirectional rounding (6 edges), polish (2 edges), diagonal feathering (5 edges), nibbling (6 edges), and scooping (1 edge). There was no apparent patterning to use within material types or the assemblage as a whole, although with the diversity of wear patterns exhibited, it is evident that a considerable range in both sawing and scraping activities was performed.

Bone Artifacts

No bone artifacts were recovered from the grids at LA 12161.

TABLE 9.24
LA 12161 EXTERIOR GRIDS–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
EXTERIOR GRIDS													
Obsidian:	3520	55	10	4	–	–	–	–	–	–	–	–	69
	3523	18	2	3	–	–	–	–	–	–	–	–	23
	3524	1	–	1	–	–	–	–	–	–	–	–	2
	3525	14	–	–	–	–	–	–	1	–	–	–	41
Basalt:	3701	51	9	4	–	–	–	–	–	–	–	–	64
	3700	2	–	–	–	1	–	–	–	–	–	–	3
	3730	1	1	–	–	–	–	–	–	–	–	–	2
	3050	6	–	–	1	–	–	–	–	–	–	–	7
Chert:	1050	5	–	3	–	–	–	–	1	–	–	–	9
	1051	7	1	–	–	2	–	–	–	–	–	–	10
	1070	1	–	–	–	–	–	–	–	–	–	–	1
	1090	2	1	–	–	–	–	–	–	–	–	–	3
	1400	2	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	14	3	–	–	–	–	–	–	–	–	–	17
	1053	34	6	1	–	1	–	–	1	–	–	–	43
	1091	16	3	1	–	–	–	–	–	–	–	–	20
	1214	3	2	–	–	–	–	–	–	–	–	–	5
	1215	19	1	–	–	–	–	–	–	–	–	–	20
	1310	1	–	–	–	–	–	–	–	–	–	–	1
	1340	3	–	–	–	–	–	–	–	–	–	–	3
Quartzite, Jasp.:	4000	5	2	–	–	–	–	–	–	–	–	–	7
	4001	1	–	–	–	–	–	–	–	–	–	–	1
	1501	1	2	–	–	–	–	–	–	–	–	–	3
Sandstone:	2200	1	–	–	–	–	–	–	–	–	–	–	1
Granite & Ands.:	3020	4	–	–	–	–	–	–	–	–	–	–	4
Grid Totals:		300	46	21	1	4	0	0	4	0	0	0	376

Historic Artifacts

Twelve pieces of slag and one fragment of light green glass were recovered from the grid units at LA 12161. The glass fragment was collected from level 1 in grid F11. The slag was recovered from grids H5, I5 and I6.

Fauna

A total of 93 bone fragments was recovered from seven different grid units: G7, G10, H5, H6, I5 and J6. Specificity in identification ranged from species to class levels, including: *Castor canadensis* (1 bone); *Canis* spp. (1 bone); *Ovis* spp./*Capra* spp. (2 bones); *Ovis* spp./*Capra* spp./*Antilocapra* spp. (20 bones); *Antilocapra* spp. (1 bone); Artiodactyla (22 bones); Anseriformes—goose-size (1 bone); medium-large mammal (7 bones); large mammal (1 bone) and bird or small mammal (3 bones). Portions of a minimum of six different individuals are represented by this sample. These include at least one domestic sheep or goat, one pronghorn, one domestic cow, one dog, one goose-size bird, and one beaver.

Miscellaneous

One piece of limonite, or yellow ochre, was recovered from level 1 in grid J6.

SUMMARY

LA 12161 consisted of a single habitation room, a trash midden and an areally limited artifactual scatter in the vicinity of the room. The types of ceramic vessels recovered suggest an occupation date in the early 18th century. The large number of domestic sheep or goat bones and frequency of spindal whorls suggest that raising and/or wool processing activities were performed at LA 12161. The large quantities of ceramic, lithic and faunal materials indicate an intensive and probably permanent, year-round occupation. This is in direct contrast to the majority of structural site locations documented elsewhere within the Permanent Pool boundaries of Cochiti Reservoir. Variability among the different classes of materials recovered from the site will be discussed below.

Ceramics

This small site yielded a wide variety of historic pottery types which probably date to the first half of the 18th century. A total of 2375 sherds was recovered.

1. Utility Wares

Utility wares constituted the bulk of the ceramic assemblage, totaling 1038 sherds. All vessels were fragmentary, but most were thick walled (7mm to 11mm), with sandy-smoothed or scored exterior surfaces and polished smudged interiors. Most were tempered with coarse grained volcanic sandstone. Forms were probably wide-mouthed globular jars with everted rims. Three percent of sherds of utility wares were from hemispherical bowls and five percent had micaceous slips. The latter contained crushed igneous and metamorphic rock temper and were probably intrusive or tradewares. The majority of the sherds were gray or grayish brown, but 13% could be classed as "red" utility ware. Sherds from slightly polished red on brown ollas and bowls also occurred in minor amounts.

Rims of plain utility jars were all flared or everted and varied in form. Rims from several different vessels were flattened or squared with a finger. Others had an exterior roll of clay. One jar rim with heavy exterior scoring and a rolled exterior lip appears to have small vertical incisions decorating the exterior rim.

Tempering materials were predominantly coarse-grained sandstone with grains of volcanic materials, such as pumice, high quartz from rhyolite welded tuff, glassy andesite, and sanidine, indicating that the plain coarse utility wares at LA 12161 were produced in the White Rock Canyon or Cochiti area. However, mica slipped utility sherds were tempered with either crushed quartz mica schist or a fine grained granite, indicating trade, possibly from the Tewa villages in the north. Although mica slipped utility ware was the predominant utility ware at the Torreon Site (LA 6178), an early 18th century site about seven kilometers south of LA 12161 at the mouth of White Rock Canyon, only 10% of the sherds contained similar tempering material, while 90% contained local volcanic sandstone.

Fragments of several small, unpolished utility ware bowls were found at LA 12161. These all contained volcanic sandstone temper and had varied rim forms. One small unpolished, undecorated utility bowl about 8cm in diameter (sherd number 12161 il.2.1689) may have been finger molded.

2. Comales

About 6% of the pottery fragments found at the site were from ceramic comales, flat baking dishes or griddles about 30cm in diameter. These culinary vessels had been produced in Mexico for some 2500 years (MacNeish 1970:11). The first record of this pottery from in the Southwest was from the historic rooms at Pueblo del Encierro (LA 70), which is located on the east bank of the Rio Grande, adjacent to the Torreon site (Warren 1974). The comale fragments are up to 1.45cm thick and have slightly upturned rims on the edges. One fragment with a well smoothed upper surface was constructed by the welding of two "pancakes" of moist clay (12161. ilA.3.1480). Another fragment has pie crust finger indentations on the outer edge. The bottom of the fragments are often encrusted with coarse volcanic sand grains, up to 4mm in diameter. The same material was used for temper in these coarse textured, friable cooking utensils.

3. "Bisque Ware"

"Bisque wares" have an unfinished appearance which is similar to ceramics after their first firing. These made up a fair percentage of the ceramics from LA 12161. These are of particular interest partly because of their method of manufacture, and partly because a discarded bowl, bloated and vitrified from firing, may indicate attempts at local manufacture of pottery.

Bowl rims of "Bisque" brownware with rolled rims, well polished interiors and bumpy, polished exterior surfaces are reminiscent of similar vessels from Pueblo Encierro (Warren 1974:38-26). The latter were apparently pancake molded over pottery molds. One bowl fragment from LA 12161 has a mold line in the center suggesting construction with two pancakes of moist clay. An "ollita" fragment (12161.ilA.1.116) has similar construction.

Other sherds from LA 12161 are rims of deep, flared bowls. One of these has some casts of burned out organic

fibers, similar to, but not as abundant as, the fiber tempered pottery from historic Pueblo del Encierro. One jar rim of bisque (12161.ilA.3.1327) is everted, almost hooked, and appears to be finger molded.

Many of the bisque ware sherds are either under-fired, or not fired at all. It seems very doubtful that vessels of this poor and miserable quality could have been obtained in trade. Although the sherd fragments were for the most part small and fragmentary, the similarity to the mold-made, and occasionally fiber tempered pottery, recognized at Pueblo del Encierro, suggests similar pottery-making methods.

Traditionally, Pueblo Indian pottery since early prehistoric time has been constructed by coiling. The sudden appearance of a new method of pottery making, failing perhaps because of poor resource materials, in an industry known for its conservatism, is more suggestive of the arrival of a pottery from distant places, perhaps, than of a skilled potter of the Rio Grande turning to or "imitating" a ware inferior to that of the Pueblos.

The type of pottery molding observed at the small house in White Rock Canyon has been described by Foster (1948:356) as a modern day technique of potters in Michoacan, Mexico. Fiber tempered and pancake molded plainware pottery, as well as the double pancake welded bases such as one found at Pueblo del Encierro, have been described by Rattray (1966:154-155, 116) in the technology of Coyotlatelco wares of the Valley of Mexico. The pottery produced along the Rio Grande above Cochiti Pueblo might very well have been made by Indian potters brought to Nuevo Mexico by Spanish Colonists to assist in the settlement of the reconquered land.

4. Polished plainwares and red-on-buff historic pottery

Although the plain polished and undecorated sherds from LA 12161 made up about 17% of the total excavated at this site, almost all of these were undecorated portions of carbon painted polychrome vessels from the Tewa villages to the north or body sherds from glaze painted vessels of the Galisteo area. However, a number of sherds were from red-on-buff hemispherical bowls produced in the Tewa villages.

Crudely polished wide mouthed jars, similar in form to the rough surfaced utility jars described above, and tempered with coarse grained volcanic sandstone, were in the minority. These latter may be akin to Casitas Red-on-Brown, described by Dick (1968:77-94) from the northern Rio Grande historic sites, but no red paint or slip was evident.

Polished blackware at LA 12161 include a ring based cup or bowl, probably from the Nambe area, a carinated bowl with volcanic sandstone temper, and one hemispherical bowl with local crystal pumice temper. Polished black pottery appeared prehistorically in the Southwest in Basketmaker III times, persisted for a few centuries, then fell into disuse. The tradition reappeared in the Tewa villages and in some of the Glaze period sites during the 17th century, but was not a common pottery type until after A. D. 1700. Mera named and described the blackware, Kapo Black (1939), as a pottery type produced by the Tewa potters. However, it was common in villages in the Middle Rio Grande, as well.

Ring based bowls occurred prehistorically as well as historically in the Valley of Mexico, and it seems likely that the inspiration for this form came directly or indirectly from there.

5. Carbon Painted Polychrome

From about A.D. 1325 until nearly 1700, glaze decorated pottery had been produced by potters in the Cochiti and Canada area. In the years following the Spanish reconquest in the 1690's, the making of glaze painted pottery ceased and carbon painted wares gradually met needs of many of the households in the area. At first, most of the pottery vessels were imported from the Tewa villages to the north, but before long a few potters were producing carbon decorated pottery in the Cochiti area.

Carbon painted polychromes constitute 11% of the ceramics recovered from LA 12161. Three major temper categories are represented: 1) White vitric tuff fragments (1mm in diameter) and individual sherds, with varying amounts of quartz sand and gold and silver colored mica; probably from the eastern Tewa villages of Nambe and Tesuque; 2) vitric tuff with pumice shards that appear black or brown in cross section; probably from villages in the Espanola valley, and 3) crystal pumice fragments with white silky vesicular pumice and phenocrysts of clear quartz and feldspar, from the Cochiti and Canada de Cochiti (Rio Chiquito) areas. The carbon painted sherds from LA 12161 in White Rock Canyon were almost evenly divided between the first two categories, with only a very small percent containing local crystal pumice temper.

Minor differences between the three source areas are reflected in slips and design. All three may be contemporary, as they are found together at historic sites such as Pueblo del Encierro and the Torreon site, which have relatively short occupations. Non-cutting tree ring dates obtained from a historic room at Pueblo del Encierro include one date of 1744vv, clusters in the early 1700's, the late 1780's, with a terminal date of 1790vv (Robinson *et al* 1972). Earlier dates are probably re-used timbers from the nearby Torreon Site, which appears to have been occupied in the early decades of the 18th century.

Soup plate forms were common at the Torreon site, but were virtually absent at LA 12161 and Encierro. At these two sites, carbon painted jars or ollas and hemispherical bowls were the favored forms. However, locally made vessels were scarce at the White Rock Canyon site (LA 12161), possibly because trade of these was not well established as yet.

With the exception of one sherd which had a carbon painted design on a red slip, all carbon painted sherds at LA 12161 were white slipped. At Encierro, red slipped carbon painted wares made up 4% of the total ceramic assemblage. Red matte paint occurs occasionally in designs of all carbon paint wares of this period.

6. Glaze Wares

One of the more interesting pottery wares found at LA 12161 is late, Glaze F. Bowls and ollas, and fragments of a Salinas Red bowl, an undecorated red ware made by glaze potters, were present. Although the glaze pottery made up less than 3% of the sherd assemblage, all contained sandy hornblende latite, and were probably made at Galisteo Pueblo. Following the Spanish Reconquest in the 1690's, Galisteo was the only Tanoan pueblo reoccupied from A.D. 1706 to 1794. And it was apparently the

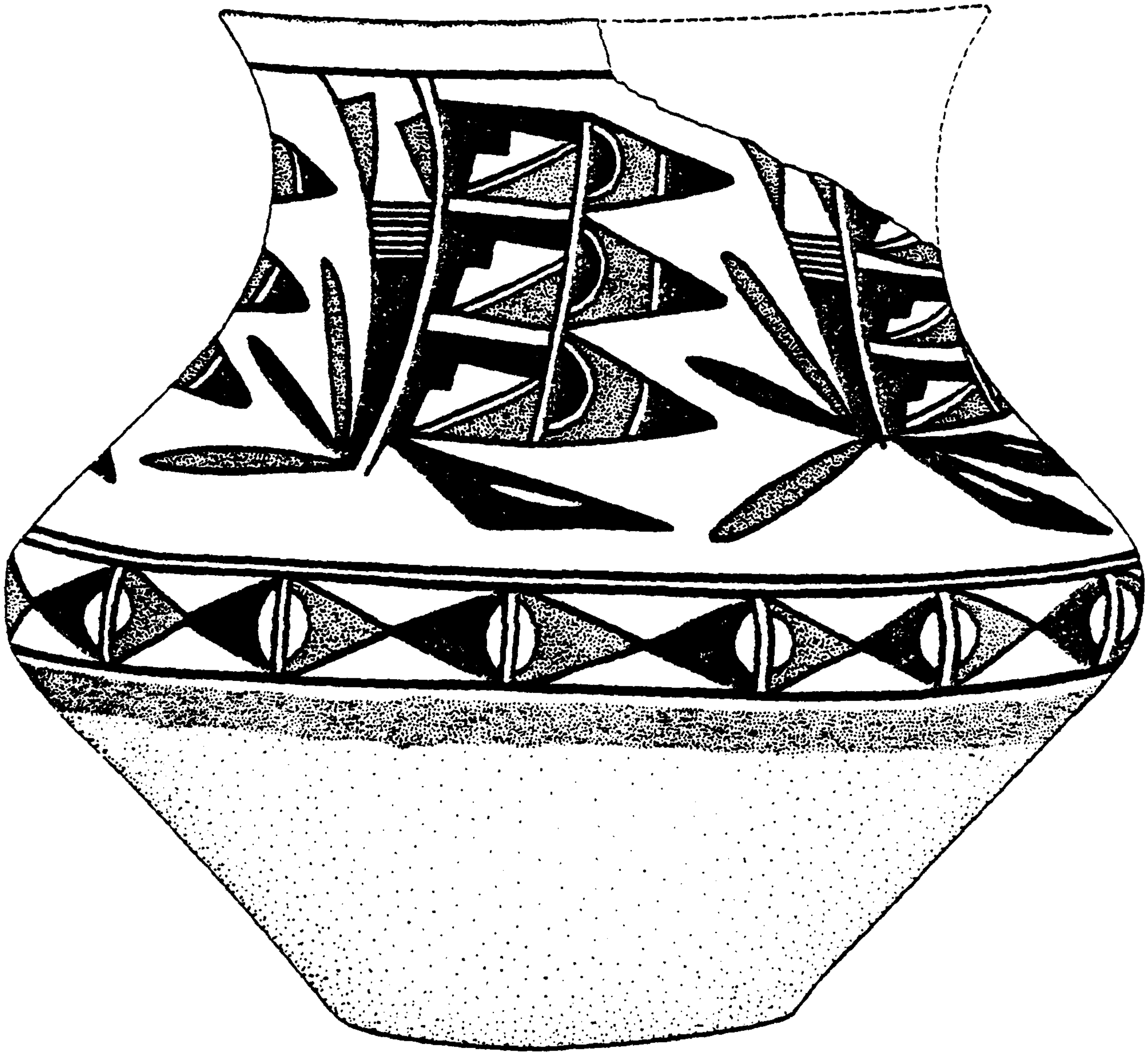

FIG. 9.17 Sketch of a reconstructed Ogapoge Polychrome vessel recovered from LA 12161

only pueblo producing glaze decorated ware for trade after A.D. 1700. A scattering of scoria tempered Glaze F pottery has been noted at early 18th century sites in the Canada de Cochiti, and Glaze painted sherds with local sandstone temper were found at the 18th century site, LA 9138.

7. **Mineral painted historic pottery**

Less than 1% of the sherds from LA 12161 were decorated with mineral paint. These were tempered with basalt in the tradition of Puname Polychrome from the Zia villages, but at least one vessel with crystal pumice temper of the Cochiti or Pajarito areas was found. Sherds of a small bowl or soup plate with a thick glossy white slip and mineral paint design had a ring base in the tradition of some Mexican pottery types (Ratray 1966).

8. **Worked sherds**

A total of 40 worked sherds were recovered from LA 12161. Of these, 32% were spindle whorls, of a type found at historic sites in the Rio Grande and Chihuahua (DiPeso 1974), and 35% were discs, probably unfinished spindle whorls. With the exception of one rectangular worked sherd made from a carbon painted bowl fragment, the balance of worked sherds exhibited one abraded edge (8 sherds) or drilled holes (3 sherds). Fifteen of the 40 sherds were from prehistoric vessels and had obviously been picked up elsewhere and brought to LA 12161.

Spindle Whorls—		
	Ogapoge Polychrome	3
	(Tewa) Historic Plainware	6
	(Local) Plainware	1
	Glaze	3
Subtotal		13
Discs—		
	Ogapoge	1
	(Tewa) Plainware	4
	Historic Utility	2
	Glaze	6
	Santa Fe B/W	1
Subtotal		14
Rectangle—		
	Ogapoge Polychrome	1
Subtotal		1
Misc. Worked Sherds—		
	Ogapoge (Tewa)	3
	Plainware (Tewa)	1
	Plainware Historic (local)	1
	Utility Historic (local)	1
	Glaze	3
	Santa Fe	2
Subtotal		12

TABLE 9.25

LA 12161—WORKED SHERDS

CERAMIC TYPE	VESSEL FORM	NO. SHERDS	TEMPER	REMARKS
Circular Discs with Central Hole Drilled (complete)				
Tewa Ogapoge Polychrome	olla	2	Vitric tuff	Red matte; circular; concave surface partially ground: 4mm center hole: 4.5 x 5cm oval; wall 8mm
Tewa Ogapoge Polychrome	olla	2	Vitric tuff	Feathered signs; framed dots; hole 4.0mm, 5.2mm diam; wall 5-6mm
Tewa Red/Buff	olla	2	Vitric tuff	center hole 4.5mm; 5.5cm diam; wall 6-8mm wall
Red polished Plainware	bowl	2	Volcanic sandstone?; high quartz; dark grain	convex side ground; hole 4mm; 4.7mm diam; 7.5-8mm wall
Tewa Buff ware	bowl	2	Vitric tuff	hole 5mm; 4.3-4.4 diam; 6.5-7.0mm wall
Fragments with Drill Hole				
Yellow (Glaze)	olla	3	San Marcos	Glaze A Yellow sherd; early P-IV; diam 6.2mm wall 4.5mm; hole 4.5mm
Glaze A Red	bowl	4	Basalt Scoria	diam 5.5mm; wall 5-6mm; hole 4mm
Tewa Buff, unpolished	?	2	Vitric tuff	parallel incisions or scratches on one side of concave side; diam 6.5mm; wall 7.5-9mm

TABLE 9.25 (con't)

CERAMIC TYPE	VESSEL FORM	NO. SHERDS	TEMPER	REMARKS
Tewa Carbon/White	bowl	1	Vitric tuff	diam 6cm; wall 7.5; drill hole 5mm
Glaze A Red?	bowl	n.d.	Hornblende latite	diam 5cm; wall 5-7; drill hole 4mm
Tewa Polished buff	bowl?	n.d.	Vitric tuff	Concave surface ground down along edges; diam 5mm; wall 6mm; drill hole 4mm
Tewa polished redware	olla	1	Vitric tuff	diam 5.5cm; wall 6-7mm; drill hole 5mm
Discs—Undrilled				
San Clemente G-P	bowl	1	Vitrophyre	diam 5.5-6cm; 6.5-7mm; asymetrical
Glaze Poly (C?)		1	Tonque latite	diam 5cm; wall 4.5mm; asymetrical
Glaze A? Polish red	bowl	1	Basalt scoria	diam 5cm; wall 5-5.5
Redware (Glaze A?)	bowl	1	Basalt	diam 5cm; wall 6-7.5mm; white powder encrusted on exterior
Tewa Buff ware (Ogapoge?)	olla	1	Vitric tuff	diam 4cm; wall 9mm
Disc Fragments				
Glaze–Red (A?)	bowl	1	Intermediate igneous	5mm; latite
Glaze–Red (A?)	olla	1	Basalt scoria	5mm
Utility scored, polished	jar	1	Sandstone	5.5mm; Red-brown utility, crumbly
Santa Fe B/W	jar	1	Vitric tuff	6mm
Glaze/yellow	jar	2	Basalt scoria	6.5mm; also 1214
Tewa buff ware	jar	1	Vitric tuff	8mm
Carbon Polychrome	jar	1	Vitric tuff	5.5mm
Utility (Buff)	jar	1	Quartzite	6mm
Redware polished	bowl	1	Vitric tuff	5mm: fine incisions on inside
Glaze/yellow	jar	2	Basalt scoria	6.5mm
Buffware polish	bowl	2	Vitric tuff	fine incisions on interior
Rectangle				
Ogapoge Polychrome Hemispherical	rim bowl	1	Vitric tuff	Rim intact; rect; fine line design 9.7 x 5.5mm
Misc. 3 sides worked				
Ogapoge Polychrome	bowl	1	Vitric tuff	5.5 x 4.5cm frag.
Misc. two sides abraded				
Redware Polish	bowl	1	Sandstone	Fragment, curved 2.5 x 3.5mm
Ogapoge Polychrome	bowl	1	Vitric tuff	Triangle; 2 sides abraded
Misc. one side abraded				
Ogapoge Polychrome	olla	1	Vitric tuff	Small frag.

TABLE 9.25 (con't)

CERAMIC TYPE	VESSEL FORM	NO. SHERDS	TEMPER	REMARKS
Redware	hemis. bowl	1	Vitric tuff	Rim, abraded slightly on rim
Redware Polish	bowl	1	Basalt scoria	Glaze A? curved surface
Glaze Y–Polychrome	olla	1	Tonque latite	
Santa Fe B/W	bowl	1	Vitric tuff	
Utility, scored polish	jar	1	Volcanic sandstone	Dark gray-brown
Ogapoge Polychrome	jar rim	2	Vitric tuff	
Glaze Y–Polychrome	bowl	1	Tonque latite	2 holes, one partially through
Ogapoge Polychrome	olla	1	Vitric tuff	1 partial drilled

9. Tempering Materials of the Historic Pottery of White Rock Canyon

The tempering materials of the historic pottery of sites in White Rock Canyon are basically the same as those of pottery of the Cochiti area and as far as is known, of the Canada de Cochiti.

Potters from the Tewa villages to the north in the Espanola Valley preferred vitric tuff which was composed of brown pumice shards, which appear black in cross section. The pottery of Nambe, Cuymonge, and Tesuque pueblos selected otucrops of white vitric tuff for their tempering materials. The potters of the Northern Rio Grande had been using similar source materials since Santa Fe time, in the 12th and 13th century, in the biscuitwares of the 14th, 15th and 15th centuries, into historic time.

Biscuitwares appeared as trade items in glaze villages, particularly those peripheral to the Tewa country. In the late 17th century, after the arrival of the first Spanish colonists, new ideas in pottery making resulted in the production of Tewa Polychrome, which soon found its way as trade ware to near and distant areas. Polished black ware and red ware was also produced in this period and soon became synonymous with Tewa pottery, although varied tempering materials indicate that these three new ceramic traditions had spread to the glaze villages in the Middle Rio Grande as well.

During the 17th century, changing events also resulted in the beginnings of mineral painted polychromes in the Keres villages of the Zia and Santo Domingo Valleys, and saw the decline and virtual disappearance of the Rio Grande glazes. It was during the last decades of the 17th century that crystal pumice first appeared as temper in the pottery of the Cochiti and Canada areas, including both carbon and mineral painted polychromes. This temper is still used today in this area, but it is significant that few glazes produced after 1700 still contained scoria in the tradition of centuries of glaze ware production on the Pajarito Plateau and Cochiti area. One suspects that the new traditions of carbon or mineral painted pottery, and the use of crystal pumice temper, indicates arrival of immigrant potters unfamiliar with the traditions of the Rio Grande glaze potters of the Middle Rio Grande or the Pajarito Plateau.

This conclusion is strengthened by the appearance of new technology and source materials in utility wares. For centuries the residents of the Pajarito Plateau and the Cochiti area had made their utility pottery with glassy andesite, rhyolite tuff or quartz mica schist. After A.D. 1700, the utility wares were tempered with coarse volcanic sandstone, crystal pumice and occasionally with andesite vitrophyre.

Fiber or organic temper appears in small, but significant, amounts in pottery from LA 12161 in White Rock Canyon, and at Pueblo del Encierro, in the Cochiti area. Perhaps the most ancient of all temper types, fiber was used in the Coyotlatelco pottery of Mexico in pre-Columbian time, and according to descriptions (Tolstoy 1958:37), was molded over or in another bowl from a pancake of clay. The bisque-like polished brown ware sometimes smudged in part, with fiber temper, may indicate a direct contact with ceramic traditions from an unknown source to the south.

Diabase basalt tempered pottery probably from the Zia Pueblo, was confined to mineral painted polychrome vessels. Locally made mineral painted jars with crystal pumice temper were in the minority at LA 9138, but also suggest new rather than revised ceramic traditions in the Cochiti area, for mineral matte painted pottery had not been produced here prehistorically.

Lithics

The lithic assemblage from LA 12161 was one of the largest recovered during the excavations in Cochiti Reservoir. High frequencies of debitage, small angular debris and facially retouched artifacts were recovered. Although the frequencies of lithics varied between samples recovered from different portions of the site, no major differences in material selection, reduction or use between the different assemblages were noted.

1. Material Selection

Obsidians and chalcedonies were selected for use at LA 12161. This is in contrast to many site locations in the reservoir where the more readily available basalts predominate the assemblages. Together the obsidian and chalcedony lithics make up between 65% and 70% of the total assemblage. Chert varies from 16% to 29%, and basalt 7% to 20%. Both the chert and chalcedony materials outcrop in the Totavi Lentil. The closest outcrop to LA 12161 is immediately adjacent to the site location.

While obsidians occur locally throughout the Cochiti study area, they are not as readily available as either the cherts, chalcedonies or basalts, which outcrop in numerous locales on both sides of White Rock Canyon. Thus it is apparent that the less available obsidians are being intentionally selected, although a wide variety of other materials outcrop in the immediate vicinity of the site location.

2. **Manufacture**

Lithic materials from all of the analytical samples provide evidence for some amount of primary decortication activities. Some of the obsidian and chalcedony materials exhibit low frequencies of cortical surfaces and may suggest further reduction of materials. The presence of relatively large frequencies of resharpening and retouch flakes indicate further stages of reduction. The majority of artifacts were manufactured through the freehand detachment of debitage, although a few bipolar flakes were recovered as well.

3. **Tool Utilization**

Most of the facially retouched artifacts exhibit use. Between 5.6% and 21.1% of the debitage and small angular debris were selected for use. The 21.1% figure is high and was collected from the floor contact assemblage. The lowest percentage was recovered from the subfloor test. The percentages of utilized flakes in the midden and grids were 12.4% and 14.6% respectively.

A considerable degree of diversity in specific task performance was indicated by the entire stone tool assemblage from LA 12161. Few projections were recovered, but variability in edge outline shape and edge sinuosity was great, as was variability in edge angles. Both unretouched and retouched edges were present in substantial frequencies, and a great degree of diversity in microscarring and edge rounding was apparent. This variability in the silicious stone tool assemblage indicates that a wide variety of scraping, whittling and cutting tasks were undertaken with respect to a number of different materials or media.

A few bone fragments exhibited evidence of having been sawn with a metal saw, and these constituted the only examples of metal implement usage within the site location.

Three gunflints manufactured from locally available chert and a piece of metal which may be a portion of the spring mechanism from a wheel lock rifle or musket were recovered as well.

It can thus be suggested that the inhabitants of LA 12161 had very little access to metal implements for the performance of routine subsistence related activities. In this respect, the archeological record of Spanish Colonial phase technological behavior seems to substantiate the historic documentation of that phase, which suggests that very few metal implements of any nature were present within the colony throughout the 18th century.

Although a few mano fragments were recovered, no metates or metate fragments were found. The degree to which this seeming paucity of milling implements might indicate a low subsistence investment into agricultural pursuits by inhabitants of the site location has not been ascertained.

Bone Tool Assemblage

The bone tool assemblages recovered from LA 12161 exhibited the largest number of utilized bones and the greatest diversity of tool classes of all sites excavated within the Permanent Pool boundaries. Of the seven classes and subclasses represented, four different activities were indicated: skinning, hide preparation, sewing and the use of a leather punch or cutter.

Nine pieces of utilized bone exhibiting projections with a blunt tip and rounding and polish on the tip of the projection along (Class 1a tools) were recovered. The character of the wear patterns from these tools suggests use for cutting or putting holes in a soft pliable material. Of these nine tools, eight were found in the trash midden and one in a cist in Room 1. One of these Class 1a tools is represented by an antler fragment. Polish can be seen on the unmodified antler tip (A photograph of this tool appears in Figure 6.1 in Chapter 6). All other Class 1a implements were lo[illegible] bone shaft fragments.

One Class 1b utilized long bone sh[illegible] fragment was recovered from LA 12161. It is charac[illegible]ized by a projection with rounding on the tip and po[illegible] and striations extending along the shaft of the imp[illegible] suggesting possible use as a needle.

Class 2a tools include three utilized bone fragments. These tools exhibit edge sharpening on a highly concave edge with rounding and polish on the utilized edge. Striations are parallel to the longitudinal axis of the bone which may imply use in the skinning process. All of these tools are long bone shaft fragments. Highly concave edges can easily be found in the fragments produced in marrow cracking. Two of these tools were found in the midden and a third was found in the Room 1 cist.

Class 2b was represented by two implements (photographs of these tools appear in Fig. IV.6.1 in Section IV, Chapter 3). This tool type is similar to Class 2a in that it reflects similar use. The only difference between Class 2a and 2b tools is that the Class 2b edge margins have not been altered. Both implements were long bone shaft fragments.

The greatest number of utilized bone fragments on LA 12161 were Class 3 tools with straight to slightly convex edges. Utilization is evidenced by rounding, polish and striations which are perpendicular to the edge margin. The wear patterns suggest us in hide preparation. Seventeen Class 3 tools were recovered from the midden area. All of these were long bone shaft fragments.

Four Class 4 bone fragments with polish extending over the outer surface of the fragments were recovered. Implication of function for these fragments has not been determined at this time.

A single Class 5 antler fragment which was grooved and snapped was recovered. Due to its poor condition, its size and shape could not be determined. It is pictured in Figure 6.2 in Chapter 6. Its function is unknown. unknown.

These seven utilized bone classes and subclasses suggest a diverse range of possible activities. Class 1a tools reflect the use of bone for cutting and putting holes in leather; Class 1b tools suggest use as a needle in sewing; hide preparation is indicated by Class 3 tools, and skin-

ning is suggested by Class 2a and 2b tools.

Of 37 utilized bone tools recovered, 35 were found in the trash midden, usggesting their utility had been exhausted. Only two were found in a storage cist in Room 1.

Bone element statistics show that 94% of the utilized bone tools were long bone shaft fragments. The other 6% are represented by one hyoid fragment and two antler fragments.

Although this 94% figure suggests a definite preference for utilization of long bone shaft fragments, availability of certain bone fragments for selection must also be considered. As a result of the process of marrow cracking, large numbers of long bone shaft fragments were produced at LA 12161. These fragments, with their sharp green breaks, are potentially useful for many tasks. Thus the large number of long bone shaft fragments selected for tool use at LA 12161 may have been a function of general availability. Stanford (1972:187) makes a similar suggestion for an Eskimo faunal assemblage with a high percentage of long bone shaft fragments.

One highly modified bone tool was recovered from LA 12161. It was whittled from a large mammal probably *Bos/Bison*, long bone shaft fragment. All surfaces exhibited polish and striations perpendicular to the tool's longitudinal axis. This tool is pictured in Figure 6.2 from Chapter 6. At this time the function of this tool is unknown.

Modified bone	Length	Width	Thickness
	92mm	14mm	8mm

TABLE 9.26

LA 12161–UTILIZED BONE TOOLS

PROVENIENCE	LEVEL	ARTIFACT NUMBER	CLASS	MEASUREMENTS (in millimeters) L	W	T	TAXON	ELEMENTS
Room 1	3	r1A.3.43	2a	59	17	15	Large Mammal	long bone shaft fragment
Feature A, Cist	3	r1A.3.47	1a	93	13	5	Large Mammal	long bone shaft fragment
Feature 1 Midden	1	i1.1.71	3	71	16	8	Artiodactyla	radius shaft fragment
	1	i1.1.78	2a	56	39	16	Large Mammal*	long bone shaft fragment
	1	i1.1.109	3	31	10	4	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.110	3	17	7	4	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.115	3	77	33	16	Large Mammal	long bone shaft fragment
	1	i1.1.116	1a	21	7	7	*Odocoileus* spp.	antler
	1	i1.1.117	3	63	23	6	Large Mammal	long bone shaft fragment
	1	i1.1.118	3	92	14	7	Large Mammal	long bone shaft fragment
	1	i1.1.121	2b	68	20	11	Large Mamm:	long bone shaft fragment
	1	i1.1.122	2b	52	13	10	Large Mammal	long bone shaft fragment
	1	i1.1.124	1a	50	12	8	Large Mammal	long bone shaft fragment
	1	i1.1.130	3	14	12	5	Large Mammal	long bone shaft fragment
	1	i1.1.137	3	77	14	7	Medium-Large Mammal	long b ne shaft fragment
	1	i1.1.138	3	66	21	5	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.139	2a	39	16	8	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.140	1a	111	15	4	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.144	3	52	27	12	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.146	1a	53	20	6	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.148	4	42	17	7	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.152	4	34	10	4	Large Mammal	hyoid fragment
	1	i1.1.155	1a	49	7	4	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.156	4	49	17	7	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.158	4	34	13	3	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.37	5	unknown fragmentary			*Odocoileus* spp.	antler
	2	i1.2.44	1a	112	13	11	*Ovis* spp./*Capra* spp.	metapodial shaft fragment
	2	i1.2.108	3	34	14	5	Large Mammal	long bone shaft fragment
	2	i1.2.126	1b	37	5	4	Large Mammal	long bone shaft fragment
	2	i1.2.129	3	92	13	5	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.130	3	71	17	6	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.131	3	53	25	9	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.132	3	49	14	12	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.134	1a	43	14	6	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.136	1a	73	13	6	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.140	3	39	12	5	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.144	3	39	10	4	Medium-Large Mammal	long bone shaft fragment

*larger than domestic sheep or goat

KEY:

L = length
W = width
T = thickness

Faunal Resource Utilization

1. Minimum Number of Individuals

Three domestic species were identified from LA 12161 representing the greatest diversity of domestic stock from any excavated site in Cochiti Reservoir. Domestic animals include a minimum of three sheep or goats, one cow and one burro. Nondomestic animals include one goose-sized bird, one mallard-sized bird, one deer, a pronghorn and one beaver. A total of 11 individuals were represented on the site, five domestic and five nondomestic and one unknown. *Canis* spp. could be domestic or nondomestic.

The number of domestic individuals represented at LA 12161 suggests that the majority of meat consumed at the site was domestic in origin. Of the nondomestic animals, the deer would provide the greatest amount of meat. The meat represented by the two birds and the beaver is significantly less (see Section II, Chapter 5).

The majority of bone was recovered from the trash midden (see Table 9.27). Although the midden was excavated in two units, it represents a single occupation. All bones recovered from the site were studied as one analytical unit.

TABLE 9.27

LA 12161—DISTRIBUTION OF FAUNAL REMAINS

TAXON	Minimum No. Of Individuals	Midden	Feature 1A	Room 1	G7	G10	H5	H6	I5	I6
Domestic Sheep or Goat	3	x	x	x	x					x
Pronghorn	1	x							x	
Domestic Cattle	1	x								
Burro	1		x							
Deer	1	x	x							
Dog	1								x	
Bird (Goose size)	1				x					
Bird (Mallard size)	1	x								
Beaver	1					x				

2. Age of Animals

Ovis spp./*Capra* spp.	1	16 mo. or less
Ovis spp./*Capra* spp.	1	24 mo. or less
Ovis spp./*Capra* spp.	1	40 mo. or more
Bos tarus	1	unknown
Equus asinus	1	unknown
Antilocapra	1	unknown
Odocoileus spp.	1	unknown
Canis spp.	1	unknown
Castor canadensis	1	unknown
Anseriformes (goose size)	1	unknown
Bird (mallard size)	1	unknown

Ovis spp./*Capra* spp. age designations on LA 12161 were based primarily on mandible tooth eruption. Of 29 mandible fragments eight could be aged. Although three age classifications were identified, only two mutually exclusive individuals could be isolated. The 24 month or less category could overlap the 16 month or less category. The 40 month or more category was differentiated. Of the three individuals represented then, one was 24 months or less, the second was 40 months or more and the age of the third was indeterminate. From the little information which could be drawn from the age identification of mandibles on LA 12161, it appears that age was unimportant in the selection of animals to be butchered.

3. Butchering Strategy

a. Meat Packages

Species element occurrange is described in Table V.3. . Elements represented seem to indicate that butchering and consumption occurred at the site for *Ovis* spp./*Capra* spp. and several categories of large mammals. Both high and low muscle mass meat packages are evident for *Ovis* spp/*Capra* spp. The large mammal category was represented by all elements as were *Bos tarus*, *Equus asinus*, *Odocoileus* spp., and *Antiolocapra americana* all of which belong to the large memmal category. When these possible overlapping species elements were consolidated, elements represented for the above animals indicated that they were butchered and consumed at the site.

b. Marrow Cracking

The faunal remains recovered from LA 12161 indicate an intensive utilization of faunal resources. About 30.5% of all identifiable bones on LA 12161 were long bone shaft fragments which are a good indication of marrow extraction and the intensity of utilization of faunal resources. The importance of this percentage is indicated when compared to the percentage of long bone shaft fragments from other excavated sites. For example, long bone shaft fragments recovered from LA 9138 represented only about 15.8% of total identifiable bones. LA 12161 had 50% more long bone shaft fragments, indicating a much greater intensity of utilization.

4. Butchering Cut Marks

Twenty bone fragments from LA 12161 exhibited cut marks. Fiver were cut with a metal tool (Type a), nine with a stone tool (Type b) and six were undetermined (Type c). Examples of these kinds of cutting marks are reproduced in Figure 6.3 in Chapter 6. Although no metal artifacts were recovered from this site, the cut marks show good evidence of metal tool use during its occupation.

5. Domestic Dogs

Although only one *Canis* spp. bone was recovered, a number of gnawed bones were recovered from LA 12161. The majority of these bones occurred throughout the trash midden implying that the gnawing occurred during occupation and that domestic dogs were present.

6. Burned Bone

Burned faunal remains were widely distributed at LA 12161. They occurred in Room 1 (levels 1-4), the

TABLE 9.28

LA 12161

MEAT PACKAGES AND LONG BONE SHAFT FRAGMENTS FOR MINIMUM NUMBER OF INDIVIDUALS

		ELEMENTS REPRESENTED								
		LOW MUSCLE MASS					HIGH MUSCLE MASS			
TAXON	MINIMUM NUMBER OF INDIVIDUALS	Vertebrae	Pelvis	Skull	Mandible	Lower Leg	Ribs	Scapula	Upper Leg	LONG BONE SHAFT FRAGMENTS
Ovis spp./*Capra* spp.	3	1	1	18	35	12		1	1	12
Antilocapra americana	1					2				
Bos tarus	1					2				
Equus asinus	1				2					
Odocoileus spp.	1			3	1					
Canis spp.	1					1				
Anseriformes (goose size)	1							1		
Bird (mailard size)	1					1				
Castor canadensis	1				1					
ADDITIONAL OVERLAPPING FAUNAL ELEMENTS										
Ovis spp./*Capra* spp.	2			48	51				1	
Bos spp./*Bison* spp.	1					2				
Equus spp.	1				1	1				
Bird (turkey size)	1					1				
Artiodactyla	2	3	6	36	47	20	2	11	4	6
Artiodactyla or Perissodactyla	1			1						
Large Mammal (*Bos* spp./*Bison* spp. size)	1			1	1	1				6
Large Mammal (not *Bos* spp./*Bison* spp size)	1				1					1
Large Mammal (larger than *Ovis* spp./*Capra* spp.)	1			1			3			4
Large Mammal	2	11	1	7	4	4	9	2	3	89
Medium-Large Mammal	2	9		8		1	8	1	1	56
Mammal	1	1		1	3					1
Bird or Mammal	1									1

Number of identifiable bones: 576

Percent of long bone shaft fragments: 30.5%

trash midden (levels 1-3) and grids G7, G8, H6, I5 and I6.

TABLE 9.29

LA 12161–DISTRIBUTION OF IDENTIFIED BURNED BONE

PROVENIENCE		LEVEL	NUMBER
Grids:	G 7	1	1
	G 8	0	1
	H 6	0	3
	I 5	1	2
		2	1
		4	1
	I 6	1	2
Test in Midden		3	6
Midden		1	7
		2	7
Room 1		1	1
		2	12
		3	3
		4	1
TOTAL			48

Summary Comments

LA 12161 was selected for excavation because it was possibly representative of other small single room Spanish Colonial phase site locations documented during the survey of the project area. Excavation of the site resulted in an unexpectedly rich yield of artifactual debris potentially informative about the nature of Spanish Colonial homestead subsistence behavior. It should be noted that much of this information can be attributed to a strictly fortuitous circumstance, in that the trash midden generated through habitation of the site location was deposited in an area which was not subject to substantial erosion after abandonment.

The homestead is characterized by relatively little investment into facility construction in that it consisted of a single room habitation structure of small size (6.7 sq. meter of floor space).

The walls of the house were constructed from locally available slab and clast elements and were built to incorporate a large existing boulder as one of the walls. A corner fireplace comprised one of two archeologically recognizable interior features within the house. The other feature was a shallow cist in the floor which had been plastered over during a floor remodeling episode.

Despite this simplicity in architectural construction, artifactual debris from fill within the house, the adjacent midden and other exterior areas indicates a prolonged occupation characterized by considerable diversity in subsistence related activities undertaken by the inhabitants of the site.

Faunal remains from the site location indicate that the inhabitants engaged both in pastoral herding of domesticated species and in procurement of nondomesticated species. Domesticated species recovered include sheep or goat, cow, burro and possibly dog. Nondomesticated species represented include mule deer, antelope, beaver and two sizes of birds.

Sheep or goats were apparently maintained for their wool as well as for meat as indicated by a considerable number of whole and broken spindle whorls manufactured from ceramic fragments. Hideworking is also indicated through the assemblage of bone tools, which include implements possibly employed for skinning,

TABLE 9.30

LA 12161–BUTCHERING CUT MARKS

PROVENIENCE	LEVEL	BONE NO.	TYPE	TAXON	ELEMENT
Room 1	4	r1.4.5	c	Large Mammal	long bone shaft fragment
Feature 1 Midden	1	i1.1.70	b	Artiodactyla	coronoid process
	1	i1.1.86	c	Artiodactyla	hyoid fragment
	1	i1.1.119	b	Large Mammal	long bone shaft fragment
	1	i1.1.120	b	Large Mammal	long bone shaft fragment
	1	i1.1.123	a	Large Mammal	unknown
	1	i1.1.126	a	Large Mammal	long bone shaft fragment
	1	i1.1.143	a	Medium-Large Mammal	long bone shaft fragment
	1	i1.1.145	b	Large Mammal	rib fragment
	1	i1.1.147	b	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.63	b	*Ovis* spp./*Capra* spp.	long bone shaft fragment
	2	i1.2.64	a	*Ovis* spp./*Capra* spp.	long bone shaft fragment
	2	i1.2.128	a	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.133	b	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.138	b	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.141	b	Medium-Large Mammal	long bone shaft fragment
	2	i1.2.50	c	*Bos tarus*	metatarsal (distal)
	2	i1.2.54	c	Large Mammal	long bone shaft fragment
	2	i1.2.55	c	Large Mammal	dentary
Grid I 6	2	I6.2.10	c	Large Mammal	long bone shaft fragment

scraping, sewing and awl work. No evidence of carding combs or loom parts was recovered.

Direct evidence of agricultural production of foodstuffs is absent within the site, although a few mano fragments may indicate maize processing. Preparation of flour or meal based foodstuffs such as tortillas is apparent, however, through the presence of ceramic comales.

Long term bulk storage of food resources is not evident as architectural facilities at the site and this absence of storage structures, coupled with the relatively small size of the room, may indicate that agriculturally produced foodstuffs did not comprise a major component of subsistence for the site inhabitants.

Evidence that the site may have been occupied continuously over a number of years, however, is found in the relatively great number of ceramic vessels recovered, the large number of stone tools and the relatively unstratified nature of the midden deposit. The ceramic vessel assemblage represents a full range of cooking, serving and storage containers, and the stone tool assemblage is characterized by a great degree of diversity in task specific usage.

The presence of several pieces of slag recovered from the midden and room fill indicates the possibility of some metallurgy being practiced at the site location. It can be suggested from the extreme paucity of metal implements or fragments recovered that such metal working was conducted primarily in repair rather than manufacturing contexts, although a hand forged iron nail was encountered. Only indirect evidence of metal implements themselves were recovered; several faunal specimens had been dismembered through use of a metal saw, and three gunflints manufactured from locally available cherts were found.

LA 12161 thus appears to represent a true homestead adaptation by a small number of individuals whose subsistence base centered predominantly upon pastoral herding and nondomesticate faunal procurement. Artifactual evidence indicates that this faunal subsistence was complemented by preparation and consumption of seeds or grains, but the lack of storage facilities at the site may indicate that extensive agricultural production of grain products was not undertaken by the inhabitants. The great number of spindle whorls, spindle whorl blanks and fragments of broken whorls is intriguing in that they may represent considerable investment into the production of wool yarn or woven goods at the site. In a similar sense, the bone tool assemblage is indicative of considerable investment into all stages of clothing manufacture from animal hides.

The possibility thus exists that the inhabitants of LA 12161 may have pursued a degree of specialization in manufacture of clothing items from both hides and wool of domesticated species and from hides of nondomesticated species. If such specialization was undertaken as routine activity by the inhabitants of LA 12161, the implications of that specialization concerning overall strategies of subsistence behavior and economic articulation of Spanish Colonial populations within the region are profound.

Historic documentation of the Spanish Colonial phase provides little more than a static outline of the fact that the phase was characterized by immigration of settlers into the New Mexico region for purposes of homestead settlement. The structure and organization of social and economic behavior of those settlers is at present unknown, and may be forever unknown through examination of the historic literature alone.

Archeological data recovered through the excavation of LA 12161 are thus extremely intriguing in that it may well indicate an economic strategy based upon task specialization and redistribution of goods and services as characteristic of the Spanish Colonial settlement of the region. It is clear from the historic literature that a coinage based money economy was not operational within the study area or within the greater New Mexico region at the time that LA 12161 was inhabited. If, however, an economic strategy predicated upon specialization in production and redistribution of foodstuffs, clothing and technological items were operational during the 18th century, the apparent lack in production or storage of agricultural products at LA 12161 might be explained through the exchange of woolen goods and hide clothing by its inhabitants for such foodstuffs.

It is of couse apparent that an overall understanding of social and economic processes underlying the subsistence related behavior of individuals during the Spanish Colonial phase cannot be defined or explicated solely through archeological investigation of a single site. Excavation and analysis of materials from LA 12161 have, however, resulted in a set of observations concerning an aspect of economic articulation pertaining among households or population segments comprising the Spanish Colonial settlement of the study area which is worthy of further research.

LA 12438

LA 12438 was a single provenience site location which consisted of several remnant walls. Ceramic materials recovered during excavation suggested two possible prehistoric Anasazi P-IV occupations and one Historic Spanish Colonial 18th century occupation.

The site is located on the east side of the Rio Grande River below the mouth of White Rock Canyon, approximately 100 meters south of Drainage Basin No. 1. LA 12438 is situated on a bench 20 meters above the river at an elevation of 5280 feet and is located in the Juniper vegetative community. Vegetation around the site included juniper along the talus and scattered on the bench behind. Other dominant vegetation consisted of grama grasses and snakeweed intermixed with rabbitbrush, sage and yucca.

Features

Surficial inspection of LA 12438 suggested the presence of two possible structures which were labeled Rooms 1 and 2. A test pit was placed in the northwest corner of what was thought to be Room 1 and was excavated to a depth of 40cm. A trench was also placed along the outside wall to define the room perimeters. Another test pit was placed 4.47m west of the first test pit and was excavated to a depth of 25cm. The results of this testing proved inconclusive in that clear details of wall construction, floors or occupation surfaces could not be ascertained. Although it is highly probable that two or more structures had been constructed at one time, the ephemeral nature of the wall foundations precludes definition of their number and size.

Artifactual Assemblages

Due to the fragmentary nature of the artifactual remains, the artifactual debris recovered from LA 12438 was collapsed into a single analytical sample. The ceramics indicated, however, two or possibly three occupations, prehistoric and historic. Proximity to LA 9139 may account for some of the density and character of artifactual debris.

Ceramic Artifacts

A total of 216 sherds was recovered from LA 12438. These indicate three possible periods of occupation: two prehistoric occupations are suggested by 47 sherds (22%) and one historic 18th century occupation (169 sherds; 78%).

1. Prehistoric Occupation:

A brief period of occupation is represented by sherds of Glaze A red and Glaze B yellow vessels. They represent 26% of the prehistoric ceramic assemblage. The Glaze A red sherds are tempered with crushed scoria, scoria and sherd, and olivine basalt, a combination of temper types which suggest early 14th century manufacture. The scattering of Glaze B yellow sherds are tempered with latite from the Galisteo Basin and may have been manufactured ca. A.D. 1400. The Abiquiu B/G and Bandelier B/G sherds, which represent 11% of the prehistoric wares, could have been associated with either the 14th or early 15th century occupations.

Early Puaray Glaze-Polychrome sherds (62%) indicate a late 15th or early 16th century occupation, which corresponds with an influx of people to Pajarito and Cochiti villages after A.D. 1450 (Warren 1974:67). No

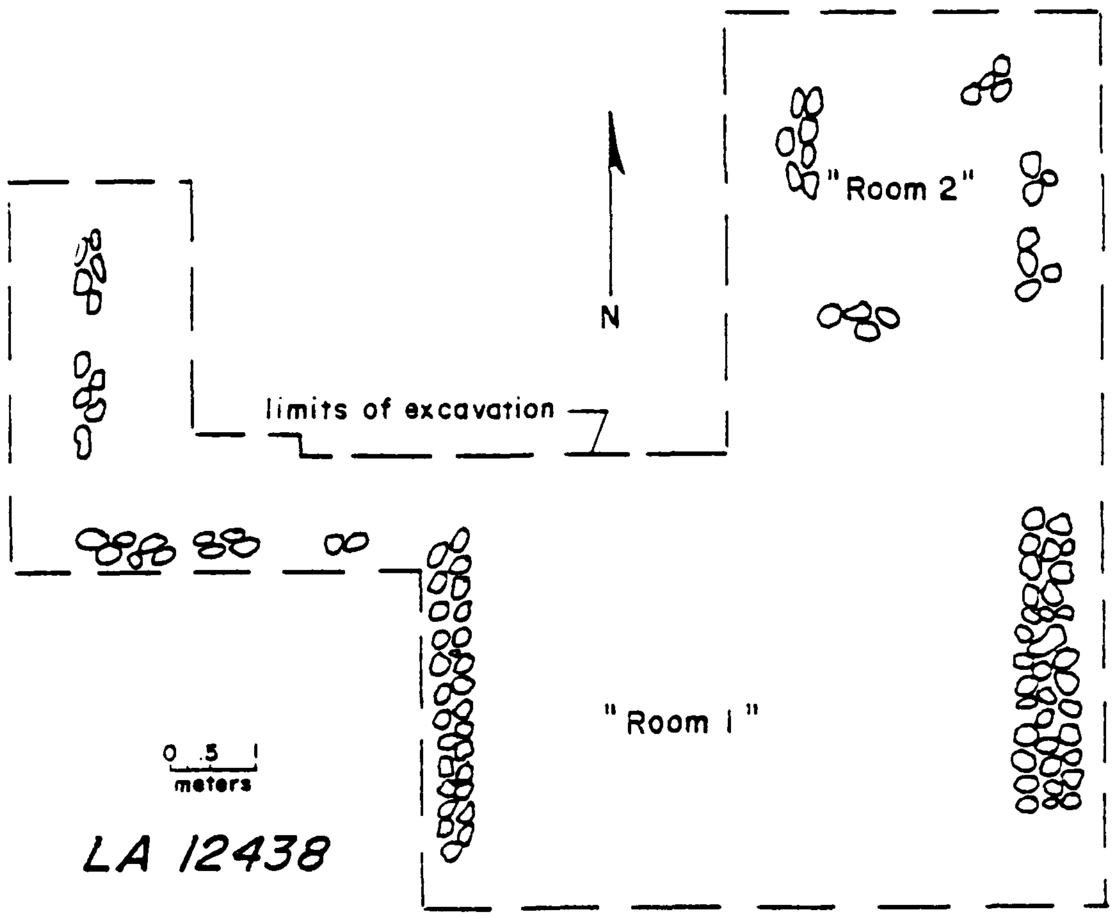

FIG. 9.18 LA 12438—Site Map

TABLE 9.31

LA 12438—PREHISTORIC CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	OLIVINE BASALT	SCORIA	SCORIA with SHERD	AUGITE LATITE	HORNBLND. LATITE	PAJARITO ANDESITE	BANDELIER RHYOLITE TUFF	VITRIC TUFF	TOTAL
AGUA FRIA G/R	–	–	1	–	–	–	–	–	1
UNID. GLAZE/RED	–	1	1	–	–	2	–	–	4
SAN CLEMENTE G-P	1	3	–	–	–	–	–	–	4
LARGO G/Y, G-P	–	–	–	1	–	2	–	–	3
UNID. GLAZE/YELLOW	–	3	–	2	–	–	–	–	5
PUARAY G-P (early)	–	–	–	–	2	–	1	–	3
UNID. GLAZE POLYCHROME	–	–	–	–	10	1	–	–	11
UNID. GLAZE	–	2	–	1	6	1	–	–	10
SANTA FE B/W	–	–	–	–	–	–	–	1	1
ABIQUIU B/G	–	–	–	–	–	–	–	2	2
BANDELIER B/G	–	–	–	–	–	–	–	3	3
TOTAL	1	9	2	4	18	6	1	6	47

prehistoric utility wares were recovered.

2. 18th Century Historic Occupation

The historic pottery at LA 12438 is similar in most respects to contemporary wares from other historic sites in the Cochiti, Rio Chiquito and White Rock Canyon areas, particularly the historic occupation of Pueblo del Encierro (LA 70).

The decorated ware is primarily carbon-painted including Tewa Polychrome(?), Ogapoge Polychrome and locally made polychromes with crystal pumice temper. One mineral painted vessel from the Zia Pueblo was found. Rim sherds from a broad line red on buff (Casitas Red/Buff) flanged bowl are reminiscent of similar vessels from Pueblo del Encierro (LA 70), but are absent at other 18th century sites. Two sherds of Glaze F bowls were probably associated with the 18th century occupation. One contained crystal pumice temper, the other volcanic sandstone, temper types which appear in minor percentages in Glaze F at the late 17th century "Old Kotyiti" (LA 295) on Potrero Viejo and the early 18th century historic Torreon Site (LA 6178) on the east bank of the Rio Grande across from Cochiti Pueblo. It seems probable that Glaze F vessels were being produced in the early decades of the 18th century in the Cochiti area. Decorated wares constituted 49% of the 170 historic sherds found at LA 12438.

Plain polished sherds included buff and red slipped sherds from jars, hemispherical bowls, and soup plates, from both the Tewa villages and the Keresan villages in the Cochiti area. Some of these may have been from carbon painted vessels. Sherds from a polished buff, flared bowl contained many organic fiber casts. Crystal pumice had been used for temper, indicating manufacture somewhere in the Cochiti area or the southern Pajarito Plateau. No coils could be observed; construction may have been pinch or pancake molded. Similar vessels were noted at Pueblo del Encierro (LA 70) and LA 12161 in White Rock Canyon, having the sandy, unfinished appearance of bisque (biscuit) ware. The amount of burned fiber varies from abundant to sparse or absent. A few of the sherds may be blackened or smudged.

Historic utility ware sherds made up 22% of the assemblage. These are coarse-textured, tempered with volcanic sand, friable and thick walled (6mm to 12mm). Wide mouthed jars are the only forms found at the site, although utility bowls have been noted at other 18th century sites in the area. Exteriors are usually smoothed and rough, and occasionally are coarsely striated. About 20% of the utility sherds at LA 12438 were mica slipped, a tradition noted at contemporary sites in the region. Interiors of the utility jars are almost always polished and usually smudged. At least one vessel had a double pancake base.

Lithic Artifacts

A total of 43 lithic artifacts was recovered from LA 12438. This small assemblage exhibited a considerable diversity in artifacts; 52% were debitage, 13% small angular debris, and 13% mano fragments. Additional artifacts included cores (8%), hammerstones (6%), facially retouched artifacts (6%), and a notched cobble (2%). The majority of the lithic artifacts were recovered in the vicinity of "Room 1."

1. Material Selection

The lithic artifacts were manufactured from chalcedony (29%, 2 taxons), basalt (23%, 3 taxons), chert (19%, 4 taxons), quartzite (13%, 1 taxon), obsidian (13%, 2 taxons), and sandstone (4%, 2 taxons). With the exception of one piece of chalcedony and two pieces of sandstone, all of the materials are locally available in the Cochiti study area. Of the debitage and small angular debris exhibiting cortical surfaces, 82.6% were derived from raw materials characterized by waterworn cortex, which may indicate their selection from beach areas in the vicinity of the site.

2. Manufacture

TABLE 9.32

LA 12438–HISTORIC CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	VITRIC TUFF (Nambe area)	VITRIC TUFF (N. Rio Grande)	PUMICE (Cochiti area)	BASALT (Zia area)	VOLCANIC SANDSTONE (Local)	ANDESITE/ VITROPHYRE (Pajarito)	UNIDENTIFIED	TOTAL
CARBON POLYCHROME	4	24	14	–	–	–	–	42
MINERAL POLYCHROME	–	–	–	37	–	–	–	37
"CASITAS" RED/BUFF	–	–	–	–	2	–	–	2
REDWARE (polished)	2	4	5	1	10	–	4	26
BUFFWARE ("Bisque")	–	–	10	–	2	–	–	12
PLAINWARE (buff, black)	1	1	3	–	6	–	–	11
KOTYITI G/R	–	–	1	–	1	–	–	2
PLAINWARE (striated)	–	–	10	–	18	2	–	30
PLAINWARE (mica slipped)	–	–	–	–	–	7	–	7
TOTAL	7	29	43	38	39	9	4	169

TABLE 9.33

LA 12438–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Obsidian:	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3530	4	–	–	–	–	–	–	–	–	–	–	4
Basalt:	3701	1	–	–	1	–	–	–	1	–	–	–	3
	3050	3	4	–	–	–	–	–	–	–	–	–	7
	3430	–	–	–	–	–	–	–	–	1	–	–	1
Chert:	1051	3	–	–	1	–	–	–	–	–	–	–	4
	1090	3	–	–	–	–	–	–	–	–	–	–	3
	1400	1	–	–	–	–	–	–	–	–	–	–	1
	1430	–	–	1	–	–	–	–	–	–	–	–	1
Chalcedony:	1091	2	–	–	1	–	–	–	–	–	–	–	3
	1214	1	–	–	–	–	–	–	2	–	–	–	3
	1215	2	2	–	1	–	–	–	–	–	–	–	5
Quartzite, Jasp.:	4000	–	–	–	–	–	–	–	–	2	–	1	3
Sandstone:	2200	1	–	–	–	–	–	–	–	–	–	–	1
	2020	–	–	–	–	–	–	–	–	1	–	–	1
Other:	3350	–	–	–	–	–	–	–	–	1	–	–	1
Total:		23	6	1	4	0	0	0	3	5	0	1	43

The presence of four cores from four different material taxons (two chalcedony, one chert and one of basalt) in addition to small quantities of debitage and small angular debris, suggests limited manufacture of tools from locally available materials. One bipolar core suggests the presence of a bipolar reduction technique, although most materials were manufactured through free-hand detachment of debitage. In view of the frequency of debitage and by-products of tool manufacture, little else can be concluded concerning the stage or character of reduction undertaken at the site location.

3. **Tool Utilization**

Six manos or mano fragments were recovered, including three one-hand manos (two whole); one two-hand mano (whole) and two undetermined mano fragments. These were manufactured from four different material taxons (quartzite, gabbro, sandstone basalt).

Three hammerstones: all made from quartzite; the large size of these artifacts, 1500g to 300g, may indicate that these were not utilized forr manufacture of silicious stone tools, although the consistency in size of the three tools suggests the possibility of a similarity in function, although it is not known what that function could have been.

Two bifaces, basalt, chalcedony and one uniface (chalcedony) and one resharpening flake (chert) represent manufacture or usage of at least four tools. Three edges of the basalt biface and one edge of the chalcedony biface exhibited even rounding and polish which are suggestive of sawing movement.

A total of ten pieces of debitage or small angular debris exhibited twelve utilized edges. Three artifacts (4 edges) were manufactured from obsidian; one artifact from basalt (1 edge); four artifacts of chert (5 edges) and

TABLE 9.34

LA 12438
MEAT PACKAGES AND LONG BONE SHAFT FRAGMENTS FOR MINIMUM NUMBER OF INDIVIDUALS

		ELEMENTS REPRESENTED								
		LOW MUSCLE MASS					HIGH MUSCLE MASS			
TAXON	MINIMUM NUMBER OF INDIVIDUALS	Vertebrae	Pelvis	Skull	Mandible	Lower Leg	Ribs	Scapula	Upper Leg	LONG BONE SHAFT FRAGMENTS
Ovis spp./*Capra* spp.	2	1			17				1	
Bos spp./*Bison* spp.	1				1	1				
Medium Artiodactyla	1							1		
ADDITIONAL OVERLAPPING FAUNAL ELEMENTS										
Artiodactyla	1				4					
Large Artiodactyla	1						1			
Medium-Large Artiodactyla	1	1								
Small Artiodactyla	1	1			5	1				
Large Mammal	1	1								7
Medium-Large Mammal	1						2			
Medium Mammal	1						1			3
Medium-Small Mammal	1						2			2

Number of identifiable bones: 53

Percent of long bone shaft fragments: 22%

two artifacts of chalcedony (2 edges). Eight of the utilized edges were straight in outline shape; only one of these edges was unidirectionally retouched. Of the remaining four utilized edges, one exhibited a concave edge outline; two, a convex outline shape, and one concave-convex. Only one convex edge was unidirectionally retouched. Wear on three of the edges was characterized solely by the presence of bidirectional rounding and polish which may indicate a sawing motion. The remaining edges were predominantly characterized by perpendicular and diagonal stepfracture, often in conjunction with nibbling. The kind of usage indicated by this wear is unclear.

Bone Artifacts

No bone artifacts were recovered from LA 12438.

Fauna

1. Minimum Number of Individuals

A minimum of four individuals was represented by the faunal remains recovered from LA 12438. Of these, two could be definitely identified as domestic sheep or goats. It was not possible to determine from the other two species identifications whether they were domestic or nondomestic.

Although the utilization of domestic animal resources for consumption is evident, it was not possible to determine if nondomestic animal resources were also used.

2. Age of Animals

Taxon	Minimum Number of Individuals	Age
Ovis spp./*Capra* spp.	1	Adult
Ovis spp./*Capra* spp.	1	Immature
Bos spp./*Bison* spp.	1	Adult
Artiodactyla (medium)	1	Unknown

3. Butchering Strategy

a. Meat Packages

Table V. describes the elements represented for each species. Once overlapping species were consolidated, both high and low muscle mass meat packages were represented for *Ovis* spp./*Capra* spp. and *Bos* spp. *Bison* spp. The presence of both meat package classifications suggests that these individuals were butchered and consumed at the site.

b. Marrow Cracking

Long bone shaft fragments are good indicators of marrow extraction. Twelve long bone shaft fragments represent 22% of the total number of 54 bone fragments. An index of the degree of faunal utilization can be seen by comparing this percentage with those from LA 12161 and LA 9138. At LA 12161 long bone shaft fragments represent 30.5% of the total number of bones, whereas at LA 9138 they represent only 15.8% of the faunal remains. Thus the percentage of long bone shaft fragments at LA 12161 indicates a more intensive utilization of faunal resources than those at LA 9138. The degree of faunal resource utilization at LA 12438 falls somewhere between these two.

c. Butchering Cut Marks

Evidence indicating the type of tools used for butchering was not present on LA 12438.

SUMMARY

The ephemeral nature of the architectural remains at LA 12438 prevents any conclusions about the structure or extent of the occupation(s) at the site location. The character of the artifactual diversity could provide insight into either the Anasazi P-IV or Historic 18th century occupation, although the lack of context reduces the utility of the information derived to some extent. In view of the large number of 18th century ceramics and the possible domesticated faunal species, it is probable that the majority of materials date to the historic occupation.

LA 12442

Location and Physiographic Situation

LA 12442 is a lithic scatter located on the east side of the Rio Grande River directly below the mouth of White Rock Canyon and approximately 900 meters upstream from the mouth of Drainage Basin No. 1. The site is situated upon the first axial gravel terrace above the river at an elevation of 5290 ft and is located 60 meters from the edge of the river.

LA 12442 is located in the Upper Sonoran Juniper vegetative community, and dominant species in the vicinity of the site include juniper, rabbitbrush, grama grasses, snakeweed and occasional prickly pear cactus. The modern vegetative structure in the neighborhood of LA 12442 can be characterized as an open juniper woodland.

Methodology of Excavation

From surficial indications LA 12442 appeared to consist of a relatively high density concentration of lithic debitage extending over an area approximately 30 meters in diameter, and a very sparse distribution of similar artifactual remains extending to the south of that concentration. No evidence of hearth utilization was evident, nor were any structural remains observed.

A grid system employing 3m x 3m units was initially established over the area of highest artifactual density. The baseline of the grid system was oriented true north, and the area encompassed by the grid system measured 36m north-south by 30m east-west. Initial subsurface testing in several grid units revealed that the artifactual remains were entirely surficial in nature. Excavation proceeded through stripping each grid unit to a depth of 10cm and screening the material through ¼ inch mesh.

A block of 34 grid units (306 square meters) in the northwestern quarter of the site were completely excavated in this fashion. Preliminary field analysis of the artifactual remains suggested that although some variability in relative density of debitage was evident among those grid units excavated, the structure of artifact taxon and material type distribution within the excavated portion of the site was uniform in nature. A decision was made to sample rather than completely excavate the remaining portions of the site area.

The remainder of the site area encompassed by the grid system was then stratified into 24 quadrats, each of which was comprised of four adjacent 3m x 3m grid units. One grid unit from each of these quadrants was then randomly selected, and excavated in the same fashion as the initial block of grid units. Excavation of LA 12442 essentially verified survey observations, in that no evidence of structures, hearth facilities, or by-products of hearth usage such as firecracked rock, charcoal or ash was encountered. A single ceramic fragment from an Espinoso Glaze-on-Yellow bowl was recovered from grid unit A10, however.

Site Description

LA 12442 was originally documented during survey as a single provenience site. Upon completion of excavation and analysis, the site was stratified into two analytical proveniences which were predominantly defined by excavation procedure. Provenience 1 was defined as the block of contiguous grid units which were initially excavated, and an additional four grid units situated contiguously to that block which were excavated as a sample of the remaining site area. Provenience 2 was defined as 16 additional grid units in the remaining portion of the site location which were excavated through the sampling procedure.

PROVENIENCE 1

Features

No features of any kind were found during excavation, and no evidence of hearth utilization was encountered. A small fragment of unburned bone was recovered from grid unit E8. This fragment could not be identified as to species or element.

Ceramic Artifacts

A single rim sherd from an Espinoso Glaze-on-Yellow bowl was recovered from grid unit A10. The sherd was tempered with augite latite, and possibly represents a vessel manufactured at San Marcos Pueblo in the Galisteo Basin of New Mexico during the mid-fifteenth century A.D.

Lithic Artifacts

A total of 1135 lithic artifacts was recovered from all of the 38 grid units comprising the provenience. Density of lithic artifacts within the provenience was 3.32 artifacts per square meter. Relatively higher densities of debitage as monitored by weight were recovered from eight contiguous grid units in the northwestern portion of the provenience (grid units A 9-10: B 9-11: C 9-11), but in general the overall density of debitage and small angular debris within the provenience was uniformly higher than densities recovered from the rest of the site area, with the exception of a distinct low density area in the eastern portion of the provenience.

The majority of lithic artifacts were debitage (87%) and small angular debris (12%).

1. Material Selection

The vast majority of all lithic artifacts recovered from Provenience 1 were manufactured from obsidian (eight taxons, 62%), followed in decreasing relative frequency by basalt (five taxons, 28%), chalcedony (six taxons, 6%), and chert (eleven taxons, 3%). An additional nine artifacts manufactured from quartzite and one artifact manufactured from jasperoid were recovered as well.

The lithic assemblage thus exhibits considerable diversity among materials, with a total of 32 different material types represented, often in comparatively substantial frequencies. Although the majority of material types are locally available within the study area, a few pieces of obsidian (type 3510) derive from volcanic formations in the Grants, N.M. area; one piece of chert (type 1430) derives from a known source in the vicinity of Laguna, N.M.; and another piece of chert (type 1040) derives from a source location in San Juan County, N.M.

The great diversity among materials recovered from Provenience 1 thus suggests that an areally extensive strategy of raw material procurement was being exercised by occupants of the site location, in contrast to the predominantly localized strategies of material procurement represented at other, contemporaneously occupied site locations within the study area.

2. Manufacture

No hammerstones and only two basalt cores and two pieces of basalt large angular debris were recovered from Provenience 1. Cortical surfaces were exhibited by 57% of all pieces of debitage and small angular debris, however, with the greatest relative percent being exhibited by obsidians (76%), followed by chalcedonies (42%), cherts (28%), and basalts (23%).

Several lines of evidence suggest that much of the obsidian debitage was manufactured through bipolar techniques of reduction. Twenty-four of the 700 pieces of obsidian exhibited attributes directly indicative of bipolar manufacture. Of the 267 pieces of obsidian debitage exhibiting platforms, fully 210 (or 79%) were characterized by cortical platforms, and of these, 173 were characterized as well by cortical dorsal surfaces. The presence of cortical platforms and dorsal surfaces on such a high percentage of the debitage would be expected if material in the form of nodules were being reduced without preparation of a striking platform. The mean length of unutilized obsidian debitage exhibiting cortex was 18.9mm (n = 458). Both these measures indicate that rather small nodules were being reduced within the analytical unit.

The remainder of the materials were apparently manufactured through freehand percussion techniques, and exhibited cortex predominantly upon their dorsal surfaces. Manufacture of basalts and chalcedonies resulted in production of greater proportions of angular debris than did manufacture of obsidians or cherts.

3. Tool Utilization

A single fragment of a shallow basin metate was re-

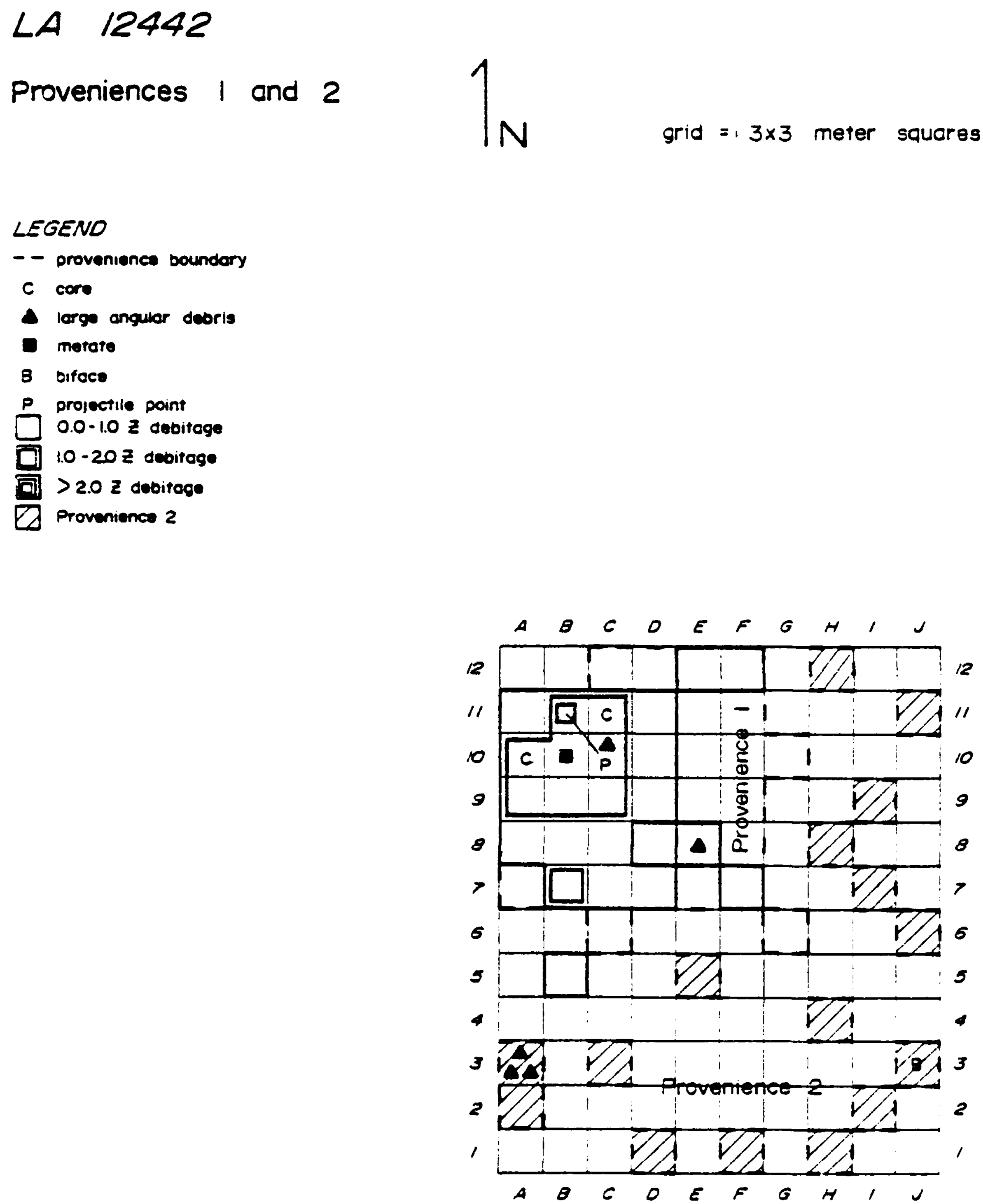

FIG. 9.19 LA 12442–Proveniences 1 and 2

covered from grid unit B10, but no manos were encountered. No other massive processing tools were recovered, and a single proximal fragment of a small side notched obsidian (3530) projectile point was encountered in grid unit B11. Three resharpening flakes of 3530 obsidian were recovered, as were single resharpening or retouch flakes from obsidian types 3524, 3526, and 3510, and one of chert. This suggests that a minimum number of five bifacially retouched tools were at one time or another employed within the provenience.

A total of 25 pieces of debitage or small angular debris exhibited 29 utilized edges, nine of which exhibited marginal retouching. Fifteen obsidian artifacts exhibited a single utilized edge apiece, while an additional artifact exhibited three edges. Obsidian edges exhibited a range in outline shapes including concave (5), straight (6), convex (5), concave-convex(1), and a single projection.

All concave edges were unretouched, and exhibited unidirectional step fracture indicative of their usage as scrapers. Four of the straight edges exhibited similar wear and were unretouched, while two exhibited wear patterns indicative of usage in a sawing fashion. One of these was unidirectionally retouched.

All five convex edges exhibited wear patterns indicative of scraping, and three of these had been unidirectionally retouched. The single concave-convex edge exhibited unidirectional retouch, and crescentic scars indicative of sawing usage. The single projection was unretouched, and had been used in a drill-like fashion.

A total of 7 basalt artifacts exhibited 9 utilized edges, one of which had been retouched. Two concave edges and two straight edges exhibited unidirectional step fracture, and another straight edge exhibited unidirectional rounding. Of the two convex edges, one had been bidirectionally retouched to a laterally sinuous outline, and exhibited bidirectional rounding. Two projections were unretouched, and exhibited bidirectional rounding along their shafts indicating usage in a drill-like fashion. No polish or striations were apparent on any basalt edges. The two edges exhibited by chert and chalcedony artifacts had been unidirectionally retouched to a laterally sinuous concave outline shape, and exhibited unidirectional step fracture.

PROVENIENCE 2

Features

No features of any kind were found during excavation, and no evidence of hearth utilization was encountered.

Ceramic Artifacts

No ceramic fragments were recovered.

Lithic Artifacts

A total of 72 lithic artifacts was recovered from 13 of the 16 grid units comprising the provenience. Lithic artifacts thus exhibited a density of 0.51 per square meter for those grid units in which they were recovered, and an overall density of 0.42 per square meter for the entire provenience excavated. The density of artifactual remains in the grid units comprising Provenience 2 was uniformly very low when compared to grid units excavated in Provenience 1. The majority of artifacts were debitage (73%) and small angular debris (20%).

1. Material Selection

Lithic materials represented within Provenience 2 were distributed among basalts (42%, 3 taxons), chalcedonies (27%, 5 taxons), and obsidians (27%, 4 taxons). A single piece of chert debitage, and two artifacts of quartzite were recovered as well, for a total of 14 taxons. The number of taxons represented in Provenience 2 is thus not as great as that for Provenience 1, although the proportional distribution of the majority of artifacts with respect to specific taxons (3530 obsidian, 3700 basalt and 1091 chalcedony) is similar. With the exception of four pieces of 3510 obsidian debitage, all materials are locally available within the study area. The lack of water-worn cortical surfaces upon basalt artifacts suggests a source other than the river beaches for that material.

2. Manufacture

Three pieces of basalt large angular debris represent the only by-products of tool manufacture other than debitage or small angular debris. Nearly 38% of the latter artifacts exhibited cortical surfaces, with the greatest relative frequency exhibited by chalcedony (56%), followed by obsidian (53%) and basalt (18%). Indications of bipolar reduction of obsidian were not as substantial as those observed for the assemblage from Provenience 1, but a single bipolar flake was recovered, and obsidian debitage exhibited a much higher frequency of cortex than generally encountered in such assemblages. Basalt and chalcedony debitage exhibited cortex predominantly upon their dorsal surfaces.

3. Tool Utilization

No milling implements or other massive processing tools were found. A single midsection fragment of a 3530 obsidian biface was recovered from grid unit J3, which exhibited bidirectional step fracture. No resharpening or retouch flakes were recovered. A single piece of obsidian debitage exhibited two utilized edges, both of which were unretouched and were characterized by unidirectional step fracture indicative of their usage as scrapers. One edge was convex in outline shape, and the other was straight in outline and laterally sinuous.

SUMMARY

LA 12442 is a surficial concentration of lithic artifact debris which reflects both tool manufacture and tool usage activities, but no evidence of hearth utilization. Assigning the site location to one or more periods of adaptation within the region is tenuous. Only two "diagnostic" artifacts were recovered from the site location: a single Espinoso G/Y sherd dating in manufacture to the P-IV phase of the Anasazi Period (A.D. 1425-1490); and a fragment of a side notched projectile point which can be attributed to date in manufacture to the Anasazi Period as well. Preliminary results of obsidian hydration analysis of 10 artifacts from the site, however, suggest that the obsidian debitage was manufactured prior to the Anasazi Period. Through comparison with hydration analysis from other pre-Anasazi site locations, the occupation of LA 12442 can tentatively be assigned to the late Archaic or early Basketmaker phase of the Archaic Period.

Analytical attempts to identify intrasite variability

TABLE 9.35

LA 12442–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3520	2	1	–	–	–	–	–	–	–	–	–	3
	3523	19	4	–	–	–	–	–	–	–	–	–	23
	3524	1	1	1	–	–	–	–	–	–	–	–	3
	3526	39	7	1	–	–	–	–	–	–	–	–	47
	3521	1	–	–	–	–	–	–	–	–	–	–	1
	3525	5	–	–	–	–	–	–	–	–	–	–	5
	3530*	517	31	3	–	–	–	–	–	–	–	–	551
	3510	60	7	1	–	–	–	–	–	–	–	–	68
Basalt:	3700	189	54	–	2	2	–	–	–	–	–	–	247
	3030	11	7	–	–	–	–	–	–	–	–	–	18
	3050	31	6	–	–	–	–	–	–	–	1	–	38
	3410	1	–	–	–	–	–	–	–	–	–	–	1
	3430	14	1	–	–	–	–	–	–	–	–	–	15
Chert:	1011	–	1	–	–	–	–	–	–	–	–	–	1
	1050	5	–	–	–	–	–	–	–	–	–	–	5
	1051	4	1	–	–	–	–	–	–	–	–	–	5
	1070	6	–	–	–	–	–	–	–	–	–	–	6
	1073	1	–	–	–	–	–	–	–	–	–	–	1
	1090	4	–	–	–	–	–	–	–	–	–	–	4
	1030	3	–	–	–	–	–	–	–	–	–	–	3
	1040	1	–	–	–	–	–	–	–	–	–	–	1
	1060	7	–	1	–	–	–	–	–	–	–	–	8
	1400	1	–	–	–	–	–	–	–	–	–	–	1
	1430	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	2	–	–	–	–	–	–	–	–	–	–	2
	1053	7	2	–	–	–	–	–	–	–	–	–	9
	1091	37	9	–	–	–	–	–	–	–	–	–	46
	1215	3	4	–	–	–	–	–	–	–	–	–	7
	1310	1	1	–	–	–	–	–	–	–	–	–	2
	1340	2	1	–	–	–	–	–	–	–	–	–	3
Quartzite, Jasp.:	4000	5	4	–	–	–	–	–	–	–	–	–	9
	1501	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		981	142	7	2	2	0	0	0	0	1	0	1135
PROVENIENCE 2													
Obsidian:	3523	–	1	–	–	–	–	–	–	–	–	–	1
	3526	1	–	–	–	–	–	–	–	–	–	–	1
	3530	11	1	–	–	–	–	–	1	–	–	–	13
	3510	3	–	–	–	–	–	–	–	–	–	–	3
Basalt:	3700	22	3	–	–	–	–	–	–	–	–	–	25
	3050	2	–	–	–	2	–	–	–	–	–	–	4
	3430	–	–	–	–	1	–	–	–	–	–	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	5	7	–	–	–	–	–	–	–	–	–	12
	1215	4	2	–	–	–	–	–	–	–	–	–	6
	1340	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	1	1	–	–	–	–	–	–	–	–	–	2
Provenience Totals		53	15	0	0	3	0	0	1	0	0	0	72

* 3530 materials from this site were reexamined after the completion of the lithic analysis and were found to be examples of 3520, a local Jemez obsidian. Other 3530 samples were examined and a similar error in classification was noted. Thus the majority of 3530 artifacts presented in this report should be read as 3520.

in the performance of activities resulted in little clear definition of discrete activity loci or discard piles. It is felt that use of a 3m x 3m grid unit size for recovery during excavation may have obscured some distributional variability which might otherwise have been apparent if a 1.0m x 1.0m grid unit size had been employed. It can also be suggested, largely through intrasite analysis of other site locations, that intrasite sampling procedures, whether stratified or random, may be of very low utility for isolating the structure of artifact distribution within site locations.

Tool manufacturing activities are clearly evident in the great volume of unutilized obsidian and basalt debitage and small angular debris. Obsidian materials were predominantly small nodules, which appeared to have been manufactured through a bipolar rather than freehand percussion technique. The remaining materials, when they exhibited platforms, were characterized by single faceted platforms, or cortical platforms in the absence of cortical dorsal surfaces, indicating that they were largely manufactured through freehand percussion techniques.

With the exception of one type of chalcedony (1091), there is little evidence that raw materials of chert and chalcedony were undergoing initial stages of manufacture in any routine fashion at the site location. The diversity among material types is very great, and each taxon is represented by a very few number of artifacts. It can be suggested that the majority of these items were being imported as pieces of debitage to the site location, unlike the assemblages of obsidian and basalt which clearly reflect their manufacture at the site itself.

LA 12443

LA 12443 was a single provenience Anasazi P-IV site with a structure (Room 1) and associated lithic and ceramic scatter. The site was located on the east side of the Rio Grande, at an elevation of 5305 ft, 500m south of the mouth of White Rock Canyon. It was situated on a slope which formed the western terminus of a gravel terrace about 200m east of the river. A shallow arroyo ran westward down the slope four meters northeast of the structure. The slope was 21% and was oriented 35 degrees west of north. Substrate of the terrace was primarily comprised of quartzite cobbles, averaging 15cm to 20cm maximum dimensions, and was overlaid by aeolian sand. The site was located in the Juniper vegetative community. Juniper was more dense on the slope of the site area than on the terrace. Snakeweed, rabbitbrush and grasses were present between the junipers.

It was apparent that a considerable degree of downward movement of artifactual debris had occurred because of the steep slope upon which the site was situated. A 2m by 2m grid system measuring 18 meters long by 6 meters wide was laid out on the slope over the structure, with the long axis down slope. The structure was located in the upper central part of the grid. Surficial artifactual debris was collected by grid. An exterior trench was excavated around the structure to determine the depth of the foundation elements. The interior of the room was excavated in three natural strata.

Room 1

Shape: Rectangular surface structure.

Orientation: The structure was exposed to the northwest with its long axis oriented 55 degrees east of true north.

Condition: Only a small remnant of the walls remained. The west wall was almost completely eroded down the slope.

Interior Room Dimensions:

	Length	Width	Height
North	1.84m	.30m	.17m
South	1.90m	.28m	.20m
East	2.10m	.30m	.23m
West	1.90m	—	—

Walls: The three intact walls were ismilar in construction and are described together below. The west wall had been eroded away.

Type of Elements: The walls were constructed from a variety of locally available elements, including large, rounded quartzite cobbles and angular basalt clasts and slabs.

Size of Elements: The maximum dimensions of the elements varied from 10cm to 40cm.

Placement and Construction of Elements: The largest elements were used as basal elements. The elements were placed with their long axis parallel to the long axis of the walls and were laid horizontally. Smaller elements were stacked on top of these basal elements. As many of the smaller elements were placed as were needed to duplicate the width of the basal elements. At several points, particularly in the south wall, large basalt slabs were set vertically on the wall interiors. All elements were dry laid.

Shaping of Elements: Unmodified.

Wall Facing: Both interior and exterior wall surfaces were unevenly faced.

Courses: Basal elements were a single element wide and one course high. There was no formal coursing in upper elements. Elements were stacked according to the size of the elements, varying greatly for equivalent heights in different sections of the walls.

Chinking: No chinking was present.

Corners: It was very difficult to determine whether

the walls interlocked or abutted due to the fragmentary nature of the remains.

Plaster: No evidence of plaster was found.

Entrances: No entrance was apparent.

Floors: Evidence of a 2cm thick hard packed adobe floor was uncovered at a depth of about 20cm below surface. The eastern half of the floor was level and was excavated slightly into the slope at the east or uphill side of the room. The west side of the room was eroded down to about 20cm below floor level. The existing floor surface curved upward slightly to meet the wall foundations.

Roofing: No evidence of roofing was found.

Interior Features:

Bin: A rectangular slab-lined bin abutted the middle of the north wall. It was constructed through placing four slabs upright around a horizontally placed bottom slab. The bin measured 29cm x 22cm and was 15cm deep. The feature was set into the floor with the tops of the upright slabs flush with the floor. The fill consisted of greasy ash deposits. No artifactual material was found within the bin.

Room Fill: The interior room fill above the floor level

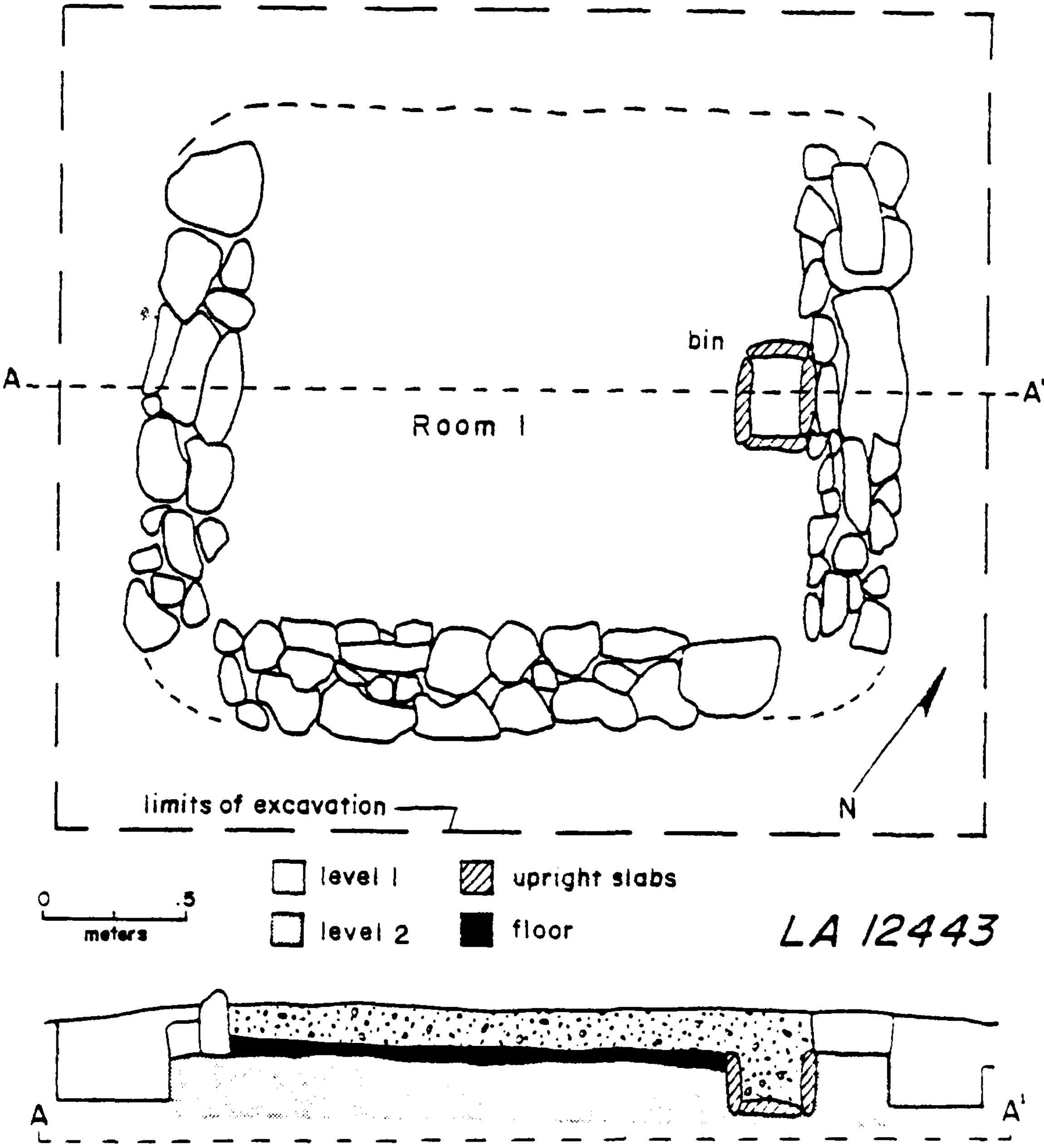

FIG. 9.20 LA 12443—Room 1, plan view and cross section

1), was fairly homogeneous tan sandy soil. It was similar to the sandy cover of the terrace above and was probably blown or washed into the structure. Below the floor, stratum 2 (level 2) the subsoil was quite different from room fill (level 1). It was much darker and more loamy, and contained many cobbles and gravels. This was probably the original ground surface upon which the room was built. Cultural material recovered from level 1 contained lithics and sherds: materials from level 2 included lithics.

Rubble: The amount of rubble around the structure was difficult to measure because the walls were made of local materials, identical to the elements on the slope. Only a small amount of rubble seemed to be present, certainly not enough for a substantially increase in the standing wall height. This may be indicative of adobe construction on cobble footings.

Exterior Fill: An exterior trench was excavated around the structure. The exterior fill around the room was similar to the interior room fill. Cultural material recovered included sherds and lithics.

Exterior Features: No exterior features were found.

Artifactual Assemblages

The lithic and ceramic materials recovered during the excavation of LA 12443 were separated into three different analytical samples: 1) fill in Room 1 which directly overlay the floor; 2) stratum below the floor, and 3) exterior grids, including the test trench adjacent to the wall foundations of Room 1.

Room 1, levels 0, 1

Since no artifacts was isolated in direct contact with either the floor or slab-lined hearth, all materials recovered from the room, including the surface collection (level 0) and the interior fill (level 1), were collapsed into a single analytical population. The fill was a homogeneous 15cm to 20cm sandy matrix.

Ceramic Artifacts

Twelve sherds from a single untyped glaze-polychrome seed jar or *tecomate* were recovered. The augite latite temper of this vessel suggests that it may have been manufactured at Tonque Pueblo in the Galisteo Basin.

Lithic Artifacts

A total of 62 lithic artifacts was recovered from Room 1. The majority of these were debitage (81.7%) and small angular debris (15.0%). One core and one biface were also recovered.

FIG. 9.21 LA 12443—Room 1

1. Material Selection

The majority of lithic artifacts within the fill were manufactured from three taxons of basalt (51.7%), followed by obsidian (20.0%, 3 taxons), chert (15.0%, 3 taxons), and one flake each of silicified wood and quartzite. One taxon of basalt (3700) represented 38.3% of the total assemblage. Although no specific source area for 3700 basalt has been located in the immediate vicinity of the site location, the material is available within the study area.

2. Manufacture

Only limited manufacturing activities are indicated by the lithic artifacts found in the room fill. The presence of one core, 18 pieces of debitage and three pieces of small angular debris from one basalt taxon suggests tool manufacturing activities. Many of these artifacts, however, did not exhibit cortical surfaces. It is possible that the core had been partially reduced prior to tool manufacture in the room. One biface was found in the fill. The absence of retouch and resharpening flakes suggests that the biface was manufactured elsewhere. Although the obsidian and chert artifacts exhibited cortical surfaces for 50.0% and 55.6% of the pieces of debitage, respectively, the small numbers of debitage and small angular debris are not indicative of primary reduction activities.

3. Tool Use

The basalt biface exhibited perpendicular step fracture on three of its edges with unidirectional rounding on one edge and even rounding on another. It is possible that this tool was used in both "scraping" and "sawing" activities. Four pieces of debitage, two basalt and two chert, were also used as tools. The chert artifacts exhibited two utilized edges each. These edges exhibited considerable diversity in shape and microscarring.

Room 1, level 2

Approximately one half of the room was excavated 30cm below the floor (level 2). Only three lithics were recovered from this test. Two material taxons were represented, obsidian and chert. The obsidian (3520) included both a retouch and resharpening flake, although no facially retouched tools were recovered from either the room or the gridded area of the site location. The remaining artifact was an unutilized piece of noncortical debitage.

Exterior Grids

A 2m x 2m grid system was superimposed over the site. Twenty-seven grid units were surface collected, and a trench was excavated along the wall foundations outside the room. Horizontal distributions of debitage weights and frequencies of ceramics were plotted for each grid and the test trench, although the steep slope (21%) may have skewed *in situ* activity areas. For this reason, artifacts recovered in grid or trench context were treated as a single analytical assemblage, although differences in horizontal distribution will be noted below, where appropriate.

Artifactual Assemblages

Ceramic Artifacts

One hundred twenty-one sherds representing a minimum of twenty-two different vessels were recovered from 21 of the 27 exterior grids. The majority of these sherds were distributed downslope from Room 1. Grids C13, C15 and C17, in particular, exhibited high frequencies. These grids are situated directly adjacent and downslope from the room, and due to the erosion of the north wall may encompass some artifacts originally deposited in the room itself.

Of the 22 vessels represented, the majority were glaze painted bowls (12) or ollas (8). Only three of these were represented by 10 or more fragments. Four fragments of a Bandelier B/G bowl were found as well, and only two of the vessels were utility wares. This low frequency of utility wares is a consistent phenomena for many P-IV sites in White Rock Canyon. The majority of vessels (60%) may have been manufactured at Tonque and San Marcos Pueblos in the Galisteo Basin.

Lithic Artifacts

A total of 196 lithic artifacts was recovered from 25 of the 27 grids outside Room 1, which resulted in a mean frequency of 6.8 artifacts per square meter for those grids exhibiting lithics and 6.3 artifacts per square meter for the site as a whole. The vast majority of these were debitage (83.0%) and small angular debris (10.5%). Four cores, three pieces of large angular debris and one chopper were also recovered. Lithic artifacts were distributed in relatively uniform fashion across the site location although higher relative densities of debitage and small angular debris were apparent in the exterior trench, and as three other concentrations. One is situated in grid C13, which is directly downslope from the eroded wall of Room 1, and hence may reflect activities performed in the room rather than those performed outside the room. The second concentration is located in two contiguous grids south of the room, E7 and E9. This is an area which is more gently sloped and may reflect *in situ* activity performance or a discard area. A third concentration is located in grid C21. This grid lies at the base of a steep slope and the density may be a function of postdeposition erosional processes.

1. Material Selection

Eighteen different material taxons are present. Basalt taxons constitute 64.9% of the total number of artifacts manufactured from three different taxons: chalcedony occurs in the second highest frequency with 12.3% from three taxons; chert make up 11.1% from four taxons, and obsidian 9.3% from three taxons. Two pieces of silicified wood and two pieces of quartzite were recorded as well. The majority of these taxons are locally available. One basalt taxon (3700) represents 24.6% of the total assemblage.

2. Manufacture

Four cores from four different material taxons (two obsidian and two basalt) were recovered. Three pieces of large angular debris, one from the same material taxon as one of the cores, were also noted. The presence of small quantities of cortical debitage and small angular debris in conjunction with either a core or large angular debris, suggests limited reduction activities being conducted for at least two materials (3701, 3700).

3. Tool Use

One chopper was recovered which exhibited battering

TABLE 9.36

LA 12443 CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	TEMPER	ROOM 1, LEVEL 1	EXTERIOR TRENCHES	EXTERIOR GRIDS–SURFACE (LEVEL 0)																					
					A9	A11	A13	A15	A19	A21	B14	C5	C9	C12	C13	C15	C17	C19	C21	E7	E9	E13	G12	AA11	AA13	
Bandelier B/G	bowl	vitric tuff	—	3	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	4
San Clemente G-P	bowl	scoria	—	—	—	—	—	—	—	—	—	—	—	1	6	7	2	—	—	—	1	2	—	—	—	19
	bowl	hornblende latite	—	4	—	—	—	1	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	7
Cieneguilla G/Y	bowl	scoria	—	1	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	1	4
	bowl	augite latite	—	1	—	—	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	5
Espinoso G-P	bowl	hornblende latite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
Unidentified G/R	olla	scoria	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
	olla	hornblende latite	—	3	1	1	2	1	1	—	7	—	—	—	—	1	1	2	—	—	—	—	—	—	3	23
	bowl	augite latite	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	2
	olla	augite latite	—	4	—	—	2	1	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	1	10
	olla	sherd	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
Unidentified G/Y	bowl	scoria	—	—	—	—	—	—	4	1	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	7
	olla	hornblende latite	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	4
	bowl	augite latite	—	2	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	4
	olla	augite latite	—	1	—	3	1	—	—	—	—	—	—	—	2	1	—	—	—	—	—	—	—	—	—	8
	bowl	sherd	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Unidentified G-P	bowl	scoria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
	bowl	hornblende latite	—	1	—	—	—	—	—	1	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	4
	ollaa	hornblende latite	—	2	—	1	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	5
	seed jar	hornblende latite	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12
Unidentified glaze-on-pink	olla	scoria	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Blind Indented	jar	mica schist	—	—	—	—	—	5	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	6
	jar	n.d.	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
TOTALS			12	28	3	5	6	8	8	2	7	2	1	3	10	11	10	2	1	1	2	2	1	1	7	133

TABLE 9.37

LA 12443—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Facially Retouched Artifacts	Manos	Metates	Hammerstones	Undetermined Ground Stone	TOTALS
ROOM 1, LEVEL 1													
Obsidian:	3520	8	–	–	–	–	–	–	–	–	–	–	8
	3526	1	–	–	–	–	–	–	–	–	–	–	1
	3521	1	–	–	–	–	–	–	–	–	–	–	1
	3525	–	1	–	–	–	–	–	–	–	–	–	1
	3530	2	1	–	–	–	–	–	–	–	–	–	3
Basalt:	3701	4	1	–	–	–	–	–	–	–	–	–	5
	3700	18	3	–	1	–	–	–	1	–	–	–	23
	3050	2	1	–	–	–	–	–	–	–	–	–	3
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
	1073	2	1	–	–	–	–	–	–	–	–	–	3
	1090	2	1	–	–	–	–	–	–	–	–	–	3
	1030	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	2	–	–	–	–	–	–	–	–	–	–	2
	1053	3	–	–	–	–	–	–	–	–	–	–	3
	1215	1	–	–	–	–	–	–	–	–	–	–	1
Silicified Wood:	1140	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4001	1	–	–	–	–	–	–	–	–	–	–	1
Room Totals:		51	9	0	1	0	0	0	1	0	0	0	62
ROOM 1, LEVEL 2													
Obsidian:	3520	–	–	2	–	–	–	–	–	–	–	–	2
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
Room Totals:		1	0	2	0	0	0	0	0	0	0	0	3
EXTERIOR GRIDS													
Obsidian:	3520	6	1	–	–	–	–	–	–	–	–	–	7
	3523	2	–	–	1	–	–	–	–	–	–	–	3
	3530	6	2	–	1	–	–	–	–	–	–	–	9
	3525	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	61	4	1	2	1	1	–	–	–	–	–	70
	3700	42	6	–	–	2	–	–	–	–	–	–	50
	3050	5	1	–	–	–	–	–	–	–	–	–	6
	3030	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1050	2	–	–	–	–	–	–	–	–	–	–	2
	1051	4	1	–	–	–	–	–	–	–	–	–	5
	1090	8	1	–	–	–	–	–	–	–	–	–	9
	1030	5	2	–	–	–	–	–	–	–	–	–	7
Chalcedony:	1053	11	–	1	–	–	–	–	–	–	–	–	12
	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1215	6	–	1	–	–	–	–	–	–	–	–	7
	1340	1	–	–	–	–	–	–	–	–	–	–	1
Silicified Wood:	1140	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	1	1	–	–	–	–	–	–	–	–	–	2
Provenience Totals:		166	19	3	4	3	1	0	0	0	0	0	196

wear. It was located in grid E9, one of the higher density lithic areas outside of Room 1. In addition, three retouch and resharpening flakes were recovered which might indicate either the manufacture or use of facially retouched artifacts. Primary artifacts selected for tool use, however, were edges of debitage and small angular debris.

Eight pieces of obsidian were selected for use. The majority of edges were straight or concave in outline shape with perpendicular step fracture and nibbling for nine of the ten edges. Eleven basalt artifacts with 18 edges exhibited usage. These tools were characterized by a greater diversity in wear than were the obsidian edges. Polish, rounding, striations, perpendicular step fracture and nibbling occurred. More of these tools exhibited bidirectional usage than did the obsidian tools. Four chert tools (4 edges) were straight in outline shape and exhibited perpendicular step fracture and scooped edges. The tool assemblage thus indicates that a variety of scraping and cutting activities were undertaken.

SUMMARY

LA 12443 is a small single room site dating to the P-IV phase of the Anasazi Period. Ceramic vessels recovered from the stie were manufactured during the early part of the P-IV phase (ca. A.D. 1325-1425), and of the 23 vessels represented, 12 were possibly manufactured at site locations in the Galisteo Basin rather than in the Cochiti Reservoir area.

The single room constructed at the site was small in size (3.7 square meters of floor space) and contained a small slab lined hearth as the only internal feature. Artifactual distributions indicate that activities involving ceramic vessel utilization and stone tool manufacture and usage were undertaken both inside and outside the room itself. No faunal remains were recovered nor was there any direct evidence of vegetative species procured or consumed at the site location. No milling implements were found, and aside from the room itself, there was no architectural evidence of long term bulk storage of food resources.

The site is thus typical of many small single room P-IV sites documented during survey of Cochiti Reservoir. The number of ceramic vessels employed at the site and the volume of lithic artifactual debris generated indicates that occupation of LA 12443 was relatively intensive. Whether this occupation was periodic and seasonal or year round could not be definitely ascertained, although the lack of evidence for bulk storage and processing of grain foodstuffs could be taken to suggest a series of recurrent seasonal habitation episodes.

The ceramic vessel assemblage represents a full range of cooking, serving and short term storage activities, and the stone tool assemblage represents considerable diversity in task specific usage. In this respect, activities undertaken at the site location do not seem to have been specialized in nature, but are rather indicative of a variety of "life maintenance" functions which might be expected if the site served as a residence base of operations for personnel pursuing more specific tasks elsewhere.

The fact that 12 of the 23 ceramic vessels recovered were manufactured from tempers available only from two different site locations within the Galisteo Basin is intriguing and is typical of other small P-IV sites documented within Cochiti Reservoir. The dynamics of intraregional and interregional trade or exchange systems operative within the Middle Rio Grande Valley during the Anasazi Period are poorly understood at present, but the regular occurrence of "exotic" vessels at small site locations such as LA 12443 indicates a highly evolved structure of economic articulation between population centers during the P-IV phase.

The specific roles played by personnel inhabiting small site locations with respect to this overall economic strategy are unknown at present and constitute a major goal of continued research into the nature of the P-IV adaptive strategies in the Middle Rio Grande.

LA 12444

Location and Physiographic Situation

LA 12444 is located on the east side of the Rio Grande River 590 meters below the mouth of White Rock Canyon. The site is situated 180 meters from the river on the first terrace above the Rio Grande, at an elevation of 5295 ft. Land surfaces in the vicinity of LA 12444 drain directly into the Rio Grande River.

The site is located in the Upper Sonoran Juniper vegetative community, and the vegetative structure in the vicinity of the site location can be characterized as an open juniper woodland. Dominant species include juniper, prickly pear cactus, snakeweed and rabbitbrush. The land surface upon which the site is located slopes gently to the north, and is currently undergoing substantial sheetwash and channel erosion. Much of the land surface is denuded of vegetation, and exposed substrate varies from relatively unstable sand and silt to areas of gravel and cobbles which underlie the sand and silt lens.

Methodology of Excavation

LA 12444 was documented during survey as a single provenience site measuring 55 meters by 45 meters in extent, characterized by a general scatter of lithic and ceramic artifacts, and possible evidence of three eroded hearth facilities. Artifacts were distributed in low densities, and survey documentation did not isolate any density patterning in the artifact distribution.

Excavation was initiated through imposing a grid system over the site area. Because of the large areal extent of the artifactual debris, 3m x 3m grid squares were defined as units of observation. The base line of the grid system was oriented nearly true north-south.

Rough estimates of artifact density for the site location were undertaken through a frequency count by

grid unit, and four general locales were selected for excavation on the basis of relatively higher artifact frequencies or the presence of possible hearth features. Test excavations indicated that the cultural remains were largely surficial, but the soil matrix comprising the uppermost 5cm to 10cm of the site surface was unconsolidated. It was felt because of this that recovery technique should involve stripping the site surface rather than surface collection alone.

Excavation thus proceeded through stripping the uppermost 10cm of soil from the surface of each grid unit and screening through ¼ inch mesh. Firecracked rock and larger slabs or clasts were weighed in kilograms.

In some cases, 3m x 3m grid units were stratified into 1.0m x 1.0m squares for recovery purposes. This was done generally for portions of the site where possible evidence of hearth utilization was observed from the surface remains.

A total area of 684 square meters was ultimately excavated, 576 square meters within 3m x 3m control and 108 square meters within 1.0m x 1.0m control. As a general comment, it is felt that employing two different grid unit sizes during excavation creates considerable difficulty during all stages of postexcavation analysis and is not recommended as a productive field recovery technique.

PROVENIENCE 1

Provenience 1 is encompassed by 18 contiguous 3m x 3m grid units in the southeast portion of the site location. A total area of 162 square meters was excavated. None of the grid units were excavated as 1.0m x 1.0m squares.

Features

No intact features were encountered during excavation, and no firecracked rock was observed.

Artifactual Assemblages

Ceramic Artifacts

No ceramic artifacts were recovered from within the provenience locale.

Lithic Artifacts

A total of 210 lithic artifacts was recovered from 16 of the 18 grid units comprising the provenience locale. Mean artifact frequency within grid units encompassing artifacts was 1.44 artifacts per square meter, and was 1.28 artifacts per square meter overall. As monitored by weight, debitage and small angular debris occurred in greatest density throughout six grid units within the southern half of the provenience.

1. Material Selection

The majority of lithic artifacts were manufactured from basalts (84%, 5 taxons) and chalcedonies (10%, 6 taxons). Other materials represented within the assemblage included obsidian (4 artifacts, 2 taxons), chert (4 artifacts, 3 taxons) and quartzite (4 artifacts, 1 taxon).

2. Manufacture

Routine manufacturing activities were reflected in the assemblages of basalt materials, three taxons of which were characterized by substantial numbers of debitage and small angular debris. Two pieces of basalt large angular debris and a single piece of chalcedony large angular debris were recovered as well. Only 25% of the basalt debitage and small angular debris exhibited cortical surfaces, and ten resharpening flakes of basalt were found, which may indicate that secondary and tertiary stages of tool manufacture were undertaken.

3. Tool Utilization

Milling activities were indicated by the occurrence of two whole shallow basin metates and a fragment of a two-hand mano. A single hammerstone was the only other massive implement recovered. Fragments of two basalt bifaces, a whole unifacially retouched basalt implement and a basalt uniface fragment were found, as were resharpening flakes from two other bifacial implements.

A total of 18 pieces of debitage exhibited 23 utilized edges. These tools were manufactured predominantly from basalt, and exhibited considerable diversity in edge outline shape. Eight of the edges had been retouched. Wear patterns exhibited by the edges were indicative of either scraping which resulted in no production of polish (15 edges) or sawing which resulted in bidirectional rounding (8 edges). Five of the latter edges exhibited polish.

PROVENIENCE 2

Provenience 2 was encompassed by nine contiguous 3m x 3m grid units within the east-central portion of the site location. Four of these larger grid units (X13, Y13, Y14 and Z14) were excavated as 1.0m x 1.0m squares, while the remaining six were excavated as 3m x 3m squares. A total area of 81 square meters was excavated.

Features

No intact features were encountered during excavation, although possible evidence of hearth utilization was recovered as low densities of firecracked rock distributed sparsely in somewhat linear fashion from the southwestern portion of the provenience toward the northeastern portion. No larger elements such as slabs or clasts, or any evidence of burning such as charcoal or ash was defined.

Artifactual Assemblages

Ceramic Artifacts

No ceramic artifacts were recovered within the provenience locale.

Lithic Artifacts

A total of only 15 lithic artifacts was recovered from six of the nine 3m x 3m grid units comprising the provenience. Artifact frequency per square meter within grid units encompassing artifacts was 0.26 per square meter, and only 0.17 per square meter overall. Little patterning in the distribution of debitage and small angular debris, as monitored by weight, was apparent.

Ten of the artifacts were manufactured from two

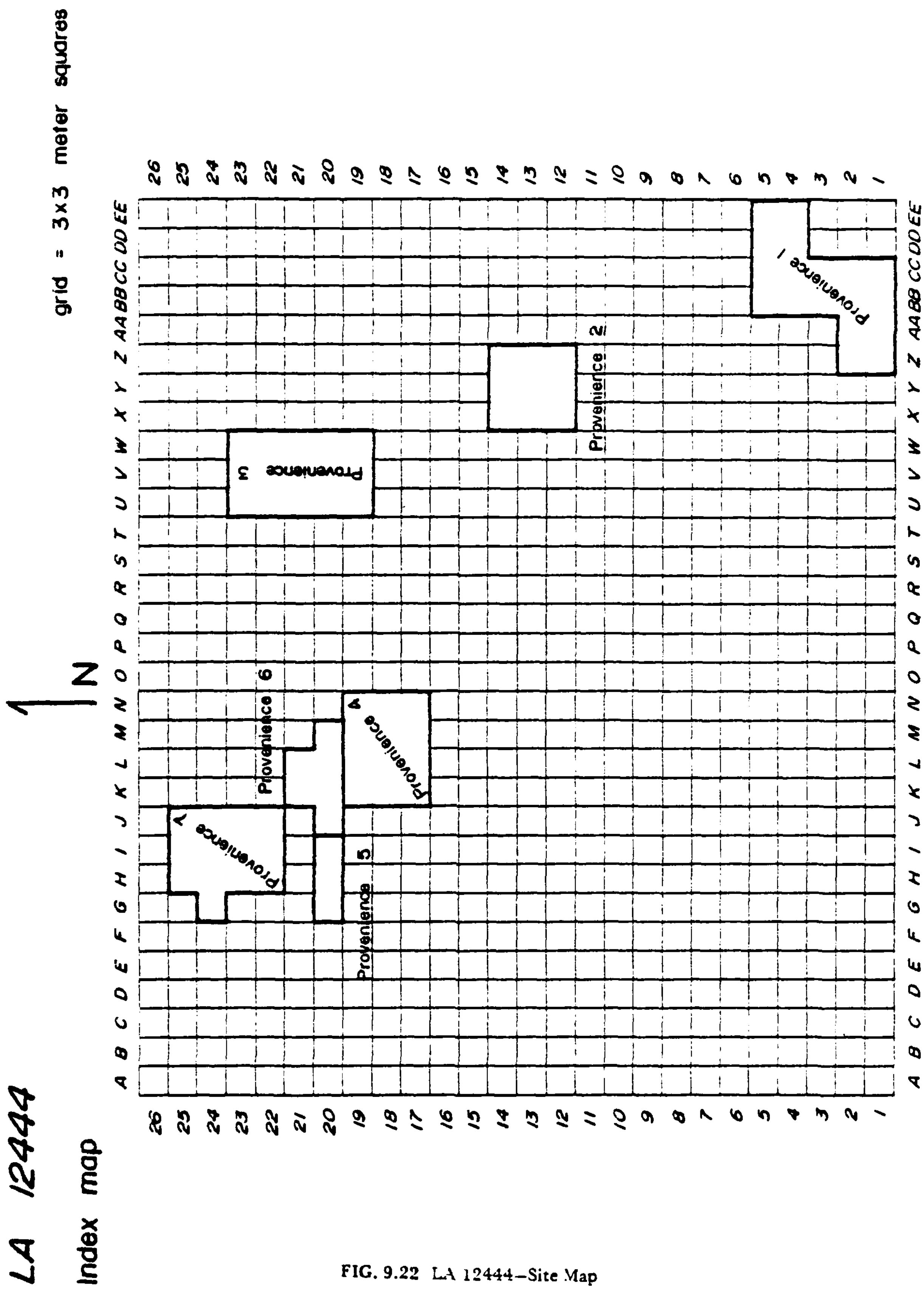

FIG. 9.22 LA 12444–Site Map

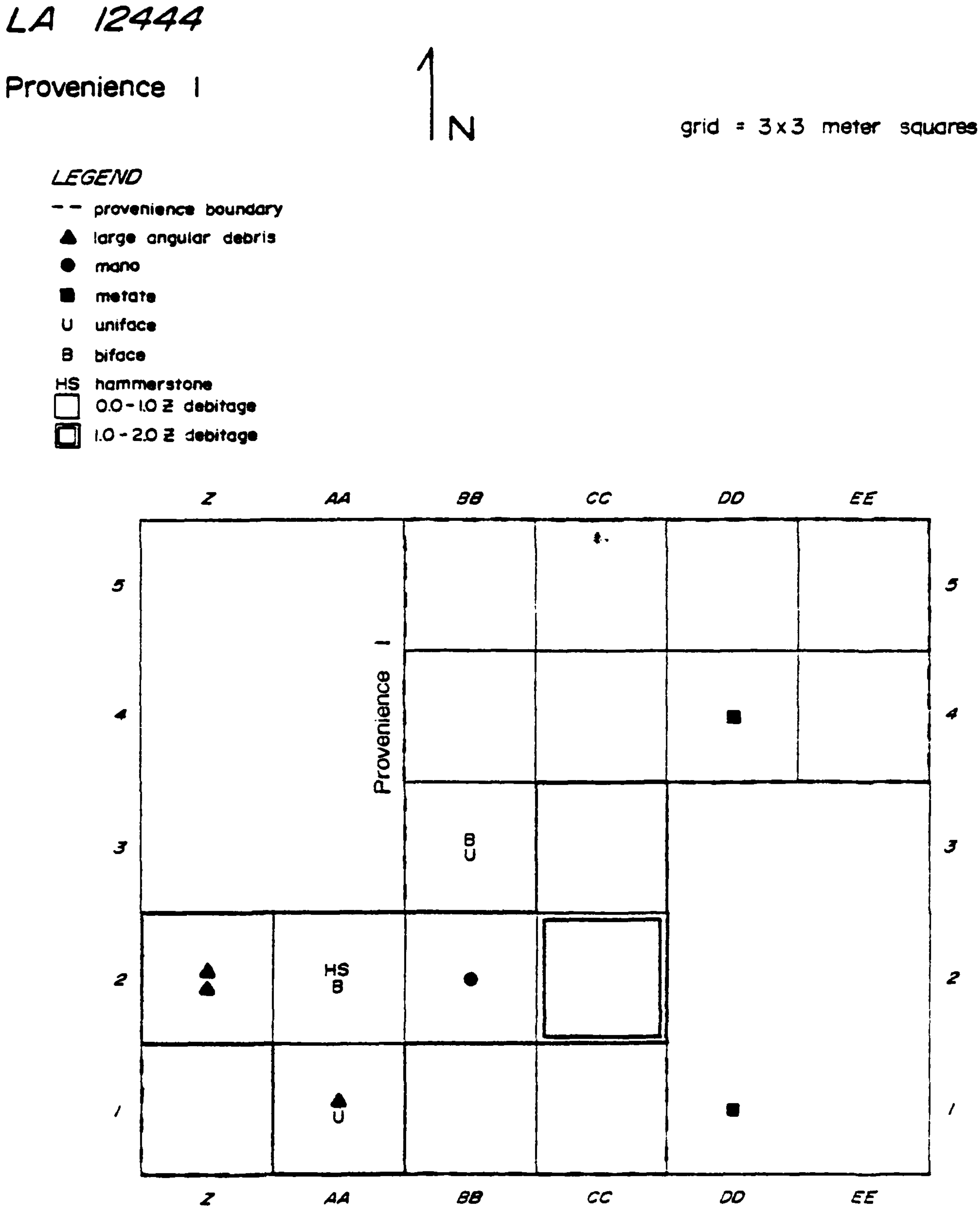

FIG. 9.23 LA 12444—Provenience 1

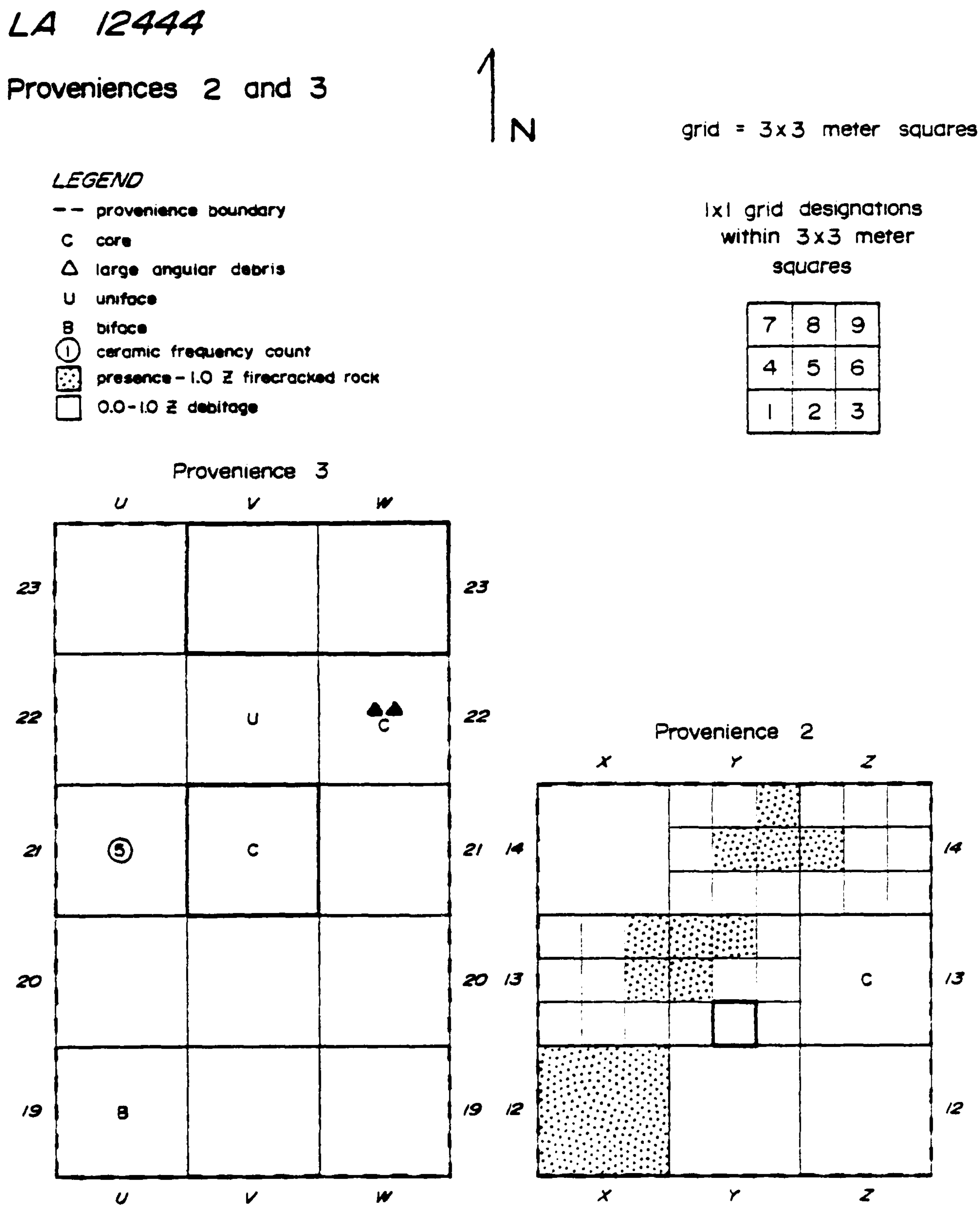

FIG. 9.24 LA 12444–Proveniences 2 and 3

taxons of basalt, while the remaining artifacts were manufactured from two taxons of obsidian and a single taxon each of chert and chalcedony. One basalt core was recovered, but there was otherwise little evidence that manufacturing activities had been routinely undertaken within the provenience locale. No evidence of tool utilization of any kind was recovered within the provenience locale.

PROVENIENCE 3

Provenience 3 was encompassed by 15 contiguous 3m x 3m grid units situated in the northeastern part of the site location. All 15 grid units were excavated as 3m x 3m squares, for a total excavated area of 125 square meters.

Features

No intact features were defined through excavation, and only ephemeral evidence of hearth utilization was recovered as infrequent spalls of firecracked basalt.

Artifactual Assemblages

Ceramic Artifacts

A total of five sherds was recovered from the grids in Provenience 3. They represented a minimum of three different vessels: one unidentified G/R bowl (1 sherd) and two unidentified glaze-polychrome (yellow-on-red) vessels, one bowl (1 sherd) and one olla (3 sherds). Portions of all three vessels were recovered from other proveniences at the site location. Tempering materials were both local and nonlocal.

Lithic Artifacts

A total of 154 lithic artifacts was recovered from 12 of the 15 grid units comprising the provenience. Mean lithic artifact frequency within grid units encompassing artifacts was 1.44 per square meter, and 1.15 per square meter overall. Debitage and small angular debris, as monitored by weight, were distributed in greatest density over the central and northern portions of the provenience.

1. Material Selection

Of the 154 artifacts recovered, the majority was manufactured from basalt (72%, 5 taxons) and obsidian (16%, 5 taxons). The remainder were manufactured from five taxons of chalcedony (9 artifacts), three taxons of chert (3 artifacts) and one taxon of jasperoid chert (2 artifacts). With the exception of two pieces of Polvadera Peak obsidian, all materials derive from sources within the study area.

2. Manufacture

Three taxons of basalt and one taxon of obsidian were represented by frequencies of debitage and small angular debris substantial enough to indicate performance of manufacturing activities within the provenience locale. Thirty-four percent of the basalt assemblage was characterized by cortical surfaces, as was fifty-eight percent of the obsidian assemblage. Only two basalt retouch or resharpening flakes were recovered, and larger reduction by-products of one basalt taxon were found. The assemblage thus may represent initial stages of artifact manufacture to a much greater extent than the assemblage from Provenience 1.

3. Tool Utilization

No massive implements were recovered from within the provenience locale. Two whole basalt bifaces were found, and a resharpening flake and a retouch flake from a different taxon of basalt indicate possible utilization of a third biface.

Five pieces of debitage exhibited a total of six utilized edges, one of which had been unidirectionally retouched. An additional artifact exhibited a unidirectionally retouched edge which did not evidence utilization. Edge outline shapes were concave (3 edges), straight (2 edges) and convex (1 edge). Wear patterns exhibited by edges indicated both scraping and possibly whittling usages which had resulted in no rounding or polish.

PROVENIENCE 4

Provenience 4 is encompassed by 12 contiguous 3m x 3m grid units located directly south of Provenience 6 in the northwestern portion of the site. Eight of these grid units were excavated as 3m x 3m squares, and four (grid units L18, L19, M18 and M19) were excavated as 1.0m x 1.0m squares. A total area of 108 square meters was excavated.

Features

No intact features were defined through excavation. Evidence of hearth utilization was recovered as low to moderate densities of firecracked rock from the central and southwestern portions of the provenience. Larger clasts which might have been used for hearth construction were recovered from three 1.0m x 1.0m squares in grid units L18 and M18.

Although no charcoal or ash was observed in this vicinity, the presence of larger elements in conjunction with firecracked rock may indicate that a hearth facility once existed near the intersection of grid units L18, L19, M18 and M19.

Artifactual Assemblages

Ceramic Artifacts

Sixty-one percent of all of the sherds recovered from LA 12444 were located in Provenience 4. Thirteen different vessels were represented by a total of 75 ceramic fragments. Five were different unidentified G/R vessels, three bowls (11 sherds) and two ollas (9 sherds); two were Cieneguilla G/Y bowls (3 sherds); two were unidentified G/Y bowls (6 sherds); four were unidentified glaze-polychrome vessels, one bowl (5 sherds) and three ollas (41 sherds). The types of pottery represented and the tempering materials suggest that the ceramics were manufactured in the early 15th century.

Lithic Artifacts

A total of 406 lithic artifacts was recovered from 11 of the 3m x 3m grid units, and from 32 of the 1.0m x 1.0m grid units excavated. Mean frequency of artifacts within the larger grid units encompassing artifacts was 4.02 per square meter. Overall frequency of lithic artifacts within the provenience locale was 3.69 per square meter.

As monitored by weight, debitage and small angular debris were distributed in greatest density over an area measuring roughly 12 square meters in extent in the center of the provenience locale. Two small, relatively high density concentrations were apparent within this distribution, one of which was situated in the southeast corner of grid unit L18, and the other of which extended from the northeast corner of that grid unit into the southeast corner of grid unit L19. Both concentrations were situated within or immediately adjacent to the epicenter of firecracked rock and possible constructional elements which may represent the location of a deflated hearth facility.

1. Material Selection

The majority of lithic artifacts were manufactured from basalt (66%, 5 taxons), obsidian (13%, 6 taxons), chalcedony (12%, 6 taxons) and chert (6%, 6 taxons). The remaining artifacts were manufactured from quartzite (5 artifacts, 2 taxons), silicified wood (2 artifacts, 1 taxon) and jasperoid chert (2 artifacts, 1 taxon).

With the exception of seven artifacts manufactured from Polvadera Peak obsidian, and two artifacts manufactured from obsidian deriving from the Mount Taylor volcanics, all taxons of material are available within the study area.

2. Manufacture

Larger by-products of reduction were evident as two cores and three pieces of large angular debris of 3701 basalt, a 3523 obsidian core, and a 1501 jasperoid chert core. A single quartzite hammerstone which may have been employed for tool manufacture was also recovered. Three taxons of basalt were represented by frequencies of debitage and small angular debris substantial enough to indicate their routine manufacture within the provenience locale. An additional two taxons of obsidian and three taxons of chalcedony were represented by frequencies of debitage and small angular debris indicating possible reduction activities as well. Relative percentages of cortical debris apparent within different assemblages of material indicate initial stages of reduction with respect to obsidians, and secondary stages of reduction with respect to basalts and possibly chalcedonies.

3. Tool Utilization

Milling activities were represented by three fragments of ground stone, one of which was a mano of indeterminate formal category, and two of which could not be identified as to category. Two other massive implements, a utilized core and a hammerstone, were recovered, as was a whole basalt biface. Two resharpening flakes indicated possible utilization of an obsidian biface and a chalcedony biface as well.

A total of 21 pieces of debitage exhibited 23 utilized edges, and an additional ten pieces of debitage exhibited retouched edge perimeters but no evidence of utilization. Tools were manufactured from basalt (9 artifacts, 11 edges), obsidian (7 artifacts, 7 edges), chalcedony (4 artifacts, 4 edges) and silicified wood (1 artifact, 1 edge). The tool assemblage was characterized by considerable diversity in edge outline shape. Edge angles were, with very few exceptions, steep, and wear patterns were restricted to unidirectional perpendicular and diagonal step fracture. Only one edge exhibited rounding, and none exhibited polish. The assemblage appears to reflect performance of a variety of scraping activities.

PROVENIENCE 5

Provenience 5 is encompassed by three contiguous 3m x 3m grid units situated directly west of Provenience 6 and south of Provenience 7 in the northwestern portion of the site. Excavation within the provenience was undertaken through employing 3m x 3m squares for control. A total area of 27 square meters was excavated.

Features

No features were defined through excavation, and no evidence of hearth utilization was recovered.

Artifactual Assemblages

Ceramic Artifacts

Two sherds representing a minimum of two different vessels were recovered from Provenience 5. Vessels included one unidentified G/Y bowl, and one unidentified G-P olla. Portions from the G/Y bowl were recovered from other proveniences at the site.

Lithic Artifacts

A total of 104 lithic artifacts was recovered from each of the grid units comprising the provenience locale. Artifact frequency per square meter was 3.85. Debitage and small angular debris were distributed in greatest density within grid unit H20.

1. Material Selection

The majority of artifacts were manufactured from basalt (76%, 4 taxons), obsidian (11%, 6 taxons) and chalcedony (7%, 4 taxons). The remaining artifacts were manufactured from a single taxon each of chert (5 artifacts), quartzite (1 artifact) and jasperoid chert (1 artifact). With the exception of two artifacts of Polvadera Peak obsidian and one of Mount Taylor obsidian, all materials represented derive from sources within the study area.

2. Manufacture

Only two taxons of basalt were represented by frequencies of debitage or small angular debris substantial enough to indicate the possibility of routine manufacturing activities. Only 17% of the basalt artifacts exhibited cortical surfaces, however, which may indicate that primary stages of manufacture were not undertaken within the provenience locale.

3. Tool Utilization

No massive implements were recovered within the provenience locale. The proximal end of an unnotched basalt biface was found, but no resharpening flakes or retouch flakes were encountered. Other evidence of tool utilization was indicated by only two pieces of debitage exhibiting utilized edges. A basalt artifact exhibited one unidirectionally retouched edge and one bidirectionally retouched edge, both of which had been used in scraping fashion. A basalt artifact exhibited a single unidirectionally retouched edge employed for scraping as well. Two of the edges were convex and one was straight in outline shape.

PROVENIENCE 6

Provenience 6 is encompassed by six contiguous 3m x 3m grid units located directly north of Provenience 4 in the northwestern portion of the site location. Five of the grid units were excavated as 3m x 3m squares and one (L20) was excavated as 1.0m x 1.0m squares. A total area of 54 square meters was excavated.

Features

No intact features were defined during excavation, but evidence of possible hearth utilization was recovered as a sparse distribution of firecracked rock in three grid units (K21, L21 and M20) around the northern and eastern portion of the provenience. Occasional larger slabs or basalt clasts were encountered in the central part of the provenience which may have once formed a hearth facility. No evidence of charcoal or ash was found.

Artifactual Assemblages

Ceramic Artifacts

Twenty-six sherds from a minimum of nine different vessels were recovered from two grids in Provenience 6. Two unidentified G/R bowls; a Cieneguilla G/Y bowl; three unidentified G/Y vessels, two bowls and one olla; and three unidentified G-P vessels, one bowl and two ollas were represented. Three of these vessels were manufactured with latite tempering materials which are available in the Galisteo Basin. The remaining vessels were manufactured with a locally available basalt scoria (5 vessels) or igneous rock of undetermined source (1 vessel).

Lithic Artifacts

A total of 237 lithic artifacts was recovered from all of the six grid units within the provenience, and from all nine squares within grid unit L20. Mean artifact frequency per square meter within the provenience was 4.39. The majority of artifacts were debitage (81%) and small angular debris (16%).

As monitored by weight, debitage and small angular debris were distributed rather densely throughout grid units K20 and L21. Two very dense concentrations occurred in two 1.0m x 1.0m squares within grid unit L20 as well.

1. Material Selection

The majority of lithic artifacts were manufactured from basalt (58%, 3 taxons), obsidian (15%, 5 taxons), chalcedony (14%, 5 taxons) and chert (9%, 5 taxons). The remaining 11 artifacts were manufactured from two taxons of silicified wood (7 artifacts), and a single taxon each of quartzite (2 artifacts), jasperoid chert (1 artifact) and metarhyolite (1 artifact). With the exception of four artifacts manufactured from Polvadera Peak obsidians (3530) and three artifacts manufactured from Mount Taylor obsidians (3510), all materials represented are available within the study area.

2. Manufacture

Debitage and small angular debris generated from three taxons of basalt, two taxons of chalcedony and one taxon of obsidian occurred in frequencies large enough to indicate that manufacturing activities may have been performed within the provenience locale. Larger by-products of reduction (cores or large angular debris) were present for two of those basalt taxons. Fifty-four percent of the obsidian artifacts exhibited cortical surfaces, whereas only 29% of the chalcedony artifacts and 32% of the basalt artifacts exhibited cortex. It thus appears that obsidian materials may have undergone initial stages of reduction within the provenience, whereas basalts and chalcedonies may have undergone secondary stages.

3. Tool Utilization

A single mano fragment which could not otherwise be assigned to formal category represented the only utilization of massive implements within the provenience locale. A fragment of a chalcedony biface and two resharpening flakes from a single taxon of basalt were the only indication of possible biface utilization.

Fifteen pieces of debitage exhibiting a total of 17 utilized edges were recovered, as were an additional four artifacts exhibiting five retouched edges characterized by no evidence of wear. The tools were manufactured from a variety of materials including obsidian (1 artifact, 1 edge), basalt (5 artifacts, 7 edges), chert (3 artifacts, 3 edges), chalcedony (3 artifacts, 3 edges) and silicified wood (3 artifacts, 3 edges). Four of the 17 edges were unidirectionally retouched.

Considerable diversity in edge outline shape is apparent, although edge angles are generally steep rather than acute. Both scraping and sawing utilization which resulted in no production of rounding or polish is indicated by wear pattern variability.

PROVENIENCE 7

Provenience 7 is encompassed by 13 contiguous 3m x 3m grid units situated in the extreme northwest corner of the site location. Four grid units (H23, H24, I23, I24) were excavated as 1.0m x 1.0m squares, while the remaining nine were excavated as 3m x 3m squares. A total area of 117 square meters was excavated.

Features

No intact features were defined through excavation. Evidence of hearth utilization was recovered as a rather dense distribution of firecracked rock over an area measuring 5m x 6m near the center of the provenience. No larger slabs or clasts were found, and there was no evidence of charcoal or ash. A single illium fragment from a possibly domestic sheep or goat (*Ovis* spp. or *Capra* spp.) was recovered from the provenience.

Artifactual Assemblages

Ceramic Artifacts

Twelve sherds representing a minimum of five different vessels were recovered from grids in Provenience 7. Portions of three unidentified G/R vessels, two bowls (5 sherds) and one olla (1 sherd); and two unidentified G/Y vessels, one bowl (1 sherd) and one olla (5 sherds), were recovered. Three of these vessels were manufactured with a scoria temper which is available on Mesa Negra to the northeast of LA 12444. The remaining two pots were manufactured with hornblende latite, which is available in the Galisteo Basin.

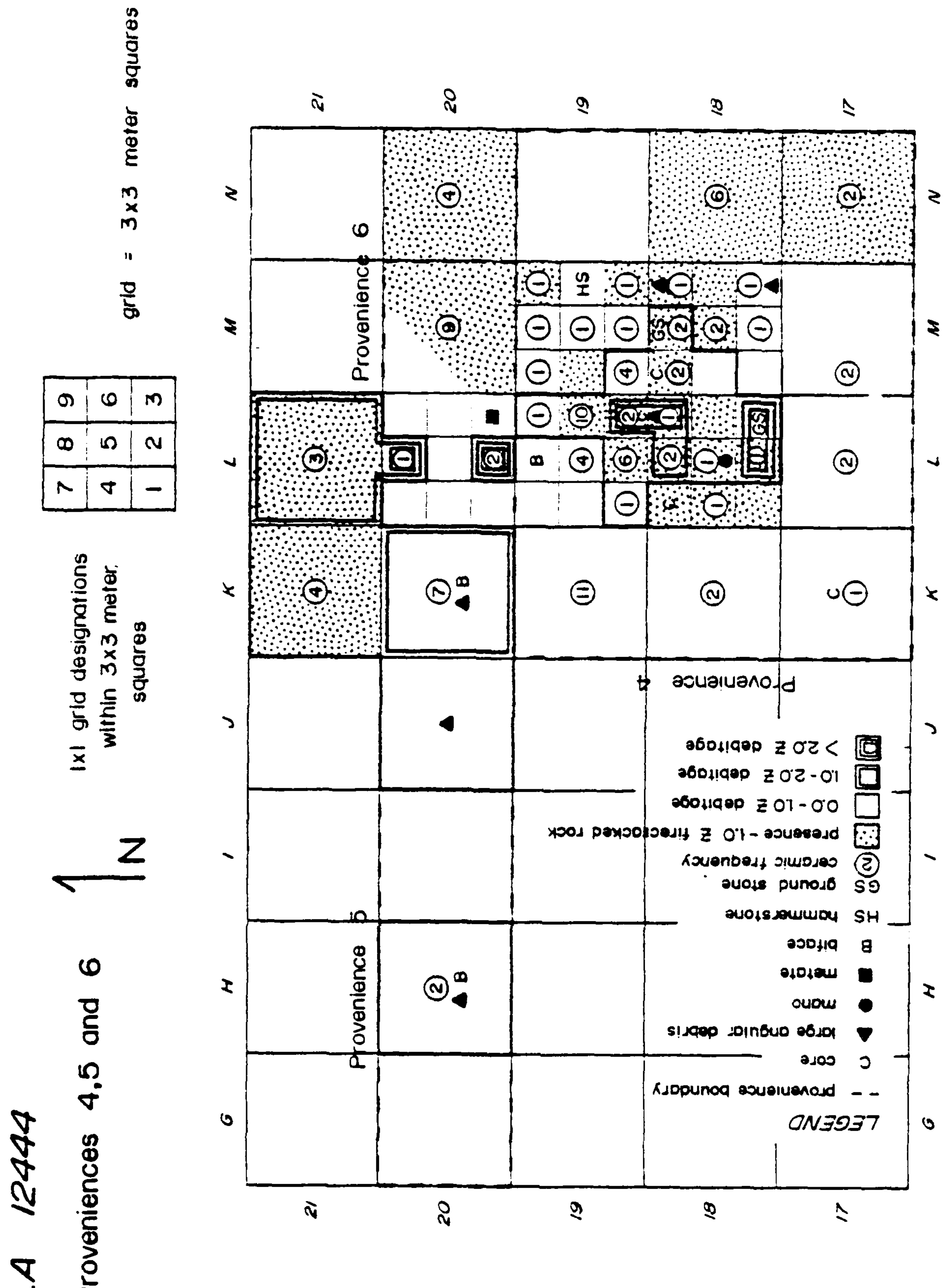

FIG. 9.25 LA 12444–Proveniences 4, 5 and 6

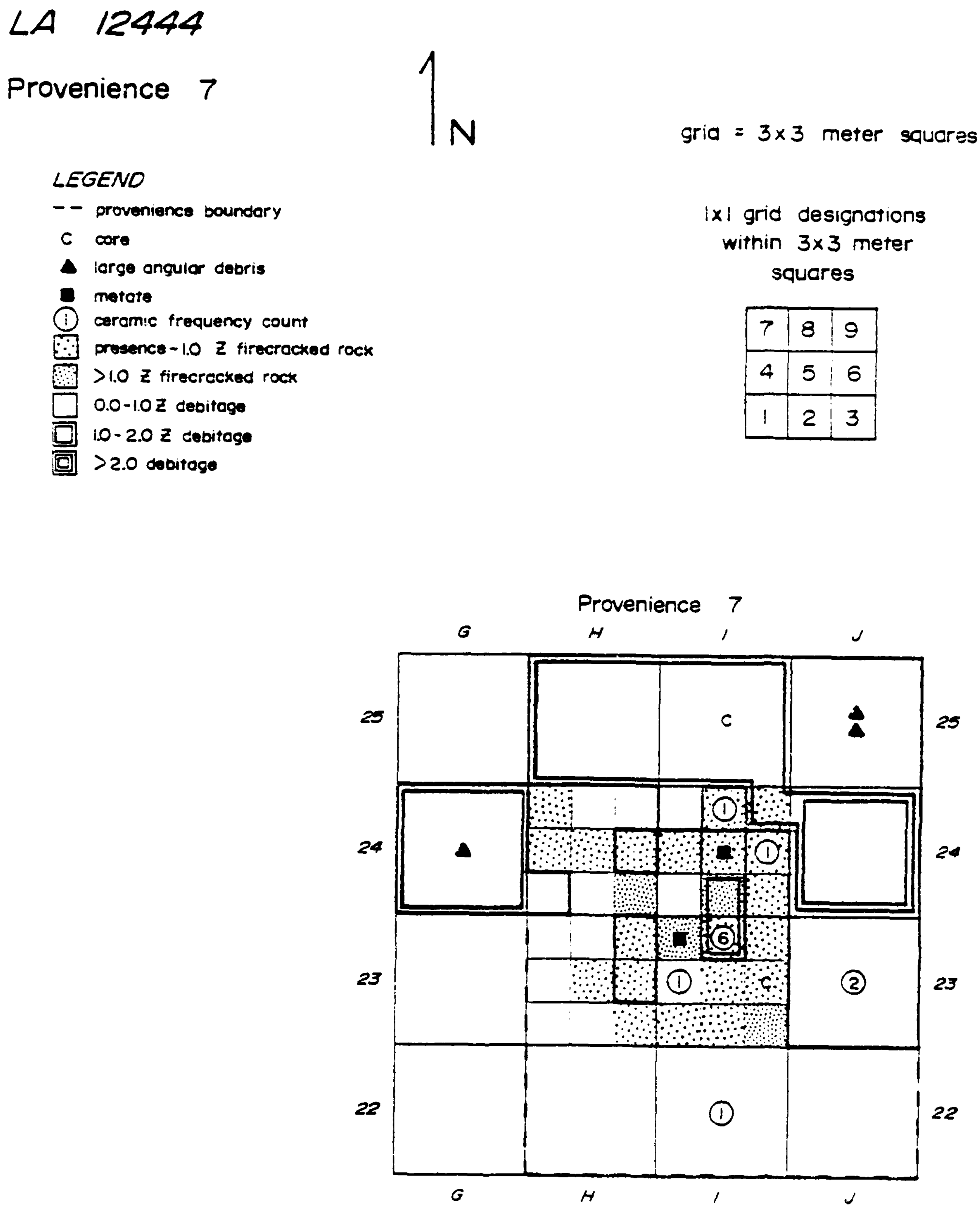

FIG. 9.26 LA 12444–Provenience 7

Lithic Artifacts

A total of 481 lithic artifacts was recovered from all of the 13 grid units comprising the provenience locale. Four grid units were excavated as 36 1.0m x 1.0m squares, and lithic artifacts were recovered from 32 of those squares. Mean frequency of artifacts per square meter was 4.04. The majority of artifacts were debitage (79%) and small angular debris (16%). As monitored by weight, debitage and small angular debris was distributed in greatest density around the western, northern and eastern perimeter of the firecracked rock concentration.

1. Material Selection

Lithic artifacts were predominantly manufactured from basalt (82%, 4 taxons), obsidian (8%, 7 taxons), chalcedony (7%, 5 taxons) and chert (4%, 5 taxons). Two additional artifacts were manufactured from single taxons of silicified wood and quartzite, respectively. With the exception of five obsidian 3530 artifacts and two obsidian 3510 artifacts, all materials derive from sources within the study area.

2. Manufacture

Three taxons of basalt, one taxon of chalcedony and one taxon of obsidian were represented by frequencies of debitage and small angular debris substantial enough to indicate their manufacture within the provenience locale. Larger by-products of reduction were present for all three basalt taxons, and for one chalcedony taxon otherwise represented by only two pieces of debitage.

Twenty-three percent of the basalt artifacts exhibited cortical surfaces, whereas 47% of the obsidian artifacts and 53% of the chalcedony artifacts were characterized by cortical surfaces.

Thirteen resharpening flakes from three taxons of basalt were recovered, which may indicate tertiary stages of manufacture were being undertaken with respect to basalt materials.

3. Tool Utilization

Milling activities are represented by fragments from two shallow basin metates, which were distributed within the vicinity of the firecracked rock concentration. No manos, mano fragments or other massive implements were found. Although no facially retouched tools were present in the assemblage, 16 resharpening flakes from six different material taxons indicated possible utilization of three basalt bifaces, and single bifaces of obsidian, chert and chalcedony.

Sixteen pieces of debitage exhibited a total of 19 utilized edges, and an additional three artifacts had been unidirectionally retouched but exhibited no evidence of utilization. All but three of the utilized tools were manufactured from basalt, and only one edge was retouched. Edge outline shapes were concave (7 edges), straight (10 edges) or convex (2 edges); and a range of edge angles from acute to steep was represented. Wear patterns indicated a predominance of unidirectional scraping activities which resulted in no production of polish or rounding. Three straight edges, however, were apparently used for sawing tasks.

SUMMARY

Dating

Assigning the deposition of artifactual debris recovered from LA 12444 to one or more temporal periods of adaptation within the study area is a difficult, although intriguing problem. The site was heavily deflated due to sheetwash and channel erosion, with the result that there existed no good physical criteria through which contemporaneity could be assigned to the deposition of artifactual debris or remnant hearth features. No obsidian hydration analysis was conducted, and no C-14 samples could be taken from the site.

Attempts to date the occupation of LA 12444 must thus take the form of evaluating the structure of spatial distribution and content of artifact assemblages.

Ceramic Artifacts

A total of 16 ceramic vessels were represented by 124 ceramic fragments, the vast majority of which were recovered from Proveniences 4, 5, 6 and 7 in the northwestern portion of the site location. All of the vessels were manufactured during the P-IV phase of the Anasazi Period. Comparison of the ceramic assemblage with other dated sites in the study area indicates that all vessels may have been manufactured between A.D. 1400 and A.D. 1450.

All vessels in the assemblage were glaze wares, and of 16 vessels represented, 10 were bowls and six were ollas. Six of the vessels were manufactured with tempering materials available within the study area (scoria and andesite tuff), and six were manufactured with tempering materials of known availability in other areas. These include augite latite (3 vessels) from the vicinity of San Marcos Pueblo in the Galisteo Valley, and hornblende latite (3 vessels) from the vicinity of Tonque Pueblo along Tonque Arroyo. The remaining four vessels were manufactured from either crushed sherd temper (2 vessels) or igneous rock temper (2 vessels) from an unknown source.

Both the relatively large number of vessels represented in the ceramic assemblage and the localized distribution of fragments within proveniences characterized by substantial frequencies of lithic artifacts and evidence of hearth utilization may indicate that they were deposited contemporaneously with other artifactual debris.

Lithic Artifacts

Few whole or fragmentary facially retouched artifacts were recovered from LA 12444, and none of those exhibited distinctive morphological attributes which would permit their "typological" comparison with known Archaic Period or Anasazi Period biface assemblages. In general, the biface assemblage was comprised of relatively large artifacts which were triangular to ovoid in outline shape, with unnotched, slightly concave proximal ends. Many of the retouch and resharpening flakes recovered had been detached from rather large bifaces as well.

The lithic assemblages reflected possible differences in the stages of manufacture undertaken with respect to specific material taxons. Obsidian materials generally reflected initial stages of reduction within all proveniences. Basalt and chalcedony materials seem to have undergone either initial stages of reduction, or predominantly secondary stages of reduction, depending upon the pro-

TABLE 9.38

LA 12444 - CERAMIC AND TEMPER VARIABILITY

PROVENIENCE 3 and PROVENIENCE 4 (GRID UNITS K17-19, L17-19)

		PROV. 3	PROVENIENCE 4															
		U21	K17	K18	K19	L17	L18(2)	L18(4)	L18(5)	L18(8)	L18(9)	L19(1)	L19(2)	L19(3)	L19(5)	L19(6)	L19(9)	
Unidentified G/R hornblende latite	bowl	—	—	—	2	—	—	—	—	1	—	—		—	—	—	—	3
igneous rock	bowl	1	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	3
	olla	—	—	—	—	—	—	—	—	—	—	—	—	1		4	—	5
scoria	bowl	—	—	—	—	—	—	—	—		—	—	1	—	1	—		2
Cieneguilla G/Y augite latite	bowl	—	1	—	—	—	—	—	1	—		—	—	—				2
Unidentified G/Y augite latite	bowl	—	—	1	3	—		—	—	—	—	—	—	—	—	—	—	4
andesite tuff	bowl	—	—	—	—	—	1	—	—	—	—		—	—				1
Unidentified G-P scoria	olla	—	—	—	—	—	—	—	—	—	—	—	1	—	—		—	1
Unidentified G (yellow/red) augite latite	bowl	1	—	—	—	2	—	—	—	—	1	—	—	—		1	—	5
scoria	olla	3	—	1	6	—		1	—	1	—	1	4	1	2	4	1	25
TOTAL		5	1	2	11	2	1	1	1	2	1	1	6	2	4	10	1	51

† figures in parentheses refer to one meter grids within the 3m x 3m grid; see map

TABLE 9.38 (con't)

LA 12444—CERAMIC AND TEMPER VARIABILITY

PROVENIENCE 4 (con't) GRID UNITS M17-19 and N17-18

CERAMIC TYPE, TEMPER and FORM		M17	M18(2)†	M18(3)	M18(5)	M18(7)	M18(8)	M18(9)	M19(1)	M19(2)	M19(3)	M19(5)	M19(7)	M19(8)	M19(9)	N17	N18	TOTAL
Unidentified G/R igneous rock	bowl	—	—	—	1	—	1	1	—	—	—	—	1	—	—	—	—	4
	olla	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	2
crushed sherd	olla	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	2
Cieneguilla G/Y scoria	bowl	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Unidentified G/Y augite latite	bowl	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Unidentified G-P (yellow/red) augite latite	bowl	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
scoria	olla	—	1	—	—	—	1	—	1	—	1	—	—	1	1	1	2	9
Unidentified G-P (glaze/pink) sherd	olla	1	—	1	—	2	—	—	1	—	—	—	—	—	—	1	3	9
TOTAL		2	1	1	2	2	2	1	4	1	1	1	1	1	1	2	6	29

† figures in parentheses refer to one meter grids within the 3m x 3m grid; see map

TABLE 9.38 (con't)

LA 12444–CERAMIC AND TEMPER VARIABILITY

PROVENIENCE 5, PROVENIENCE 6, PROVENIENCE 7 and GRID N20

CERAMIC TYPE, TEMPER and FORM		H20	K20	K21	L20(2)†	L20(8)	L21	M20	I22	I23(4)	I23(8)	I24(6)	I24(7)	J23	N20	TOTAL
Unidentified G/R hornblende latite	bowl	–	–	–	–	–	–	–	–	–	1	–		–	–	1
	olla	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
igneous rock	bowl	–	–	–	1	–	2	2	–	–	–	–	–	–		5
scoria	bowl	–	–	–	–	–	1	–	–	–	4	–		–	–	5
Cieneguilla G/Y augite latite	bowl	–	–	–	–	–	–	1	–	–	–	–	–			1
scoria	bowl	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Unidentified G/Y augite latite	bowl	1	3	–	–	–	–	–	–	–	–	–	–	–	–	4
scoria	bowl	–	–	–	–	–	–	–	–	–	–	–	–	1		1
Unidentified G-P (yellow/red) hornblende latite	bowl	1	–	–	–	–	–	–	–	–	–	–	–		–	1
augite latite	bowl	–	–	1	–	1	–	1	–	–	–	–				3
scoria	olla	–	4	3	1	–	–	5	–	1	1	1	1	1	3	21
TOTAL		2	7	4	2	1	3	9	1	1	6	1	1	2	4	44

† figures in parentheses refer to one meter grids within the 3m x 3m grid; see map

TABLE 9.39

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3525	1	–	–	–	–	–	–	–	–	–	–	1
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	43	10	2	–	1	–	–	–	–	–	–	56
	3700	63	13	6	–	1	–	–	4	–	–	–	87
	3050	21	4	2	–	–	–	–	–	–	1	–	28
	3401	2	–	–	–	–	–	–	–	–	–	–	2
	3410	–	1	–	–	–	–	–	–	–	–	–	1
Chert:	1011	–	1	–	–	–	–	–	–	–	–	–	1
	1051	–	1	–	–	–	–	–	–	–	–	–	1
	1030	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	1	1	–	–	–	–	–	–	–	–	–	2
	1053	2	3	–	–	–	–	–	–	–	–	–	5
	1091	–	2	–	–	–	–	–	–	–	–	–	2
	1214	2	–	–	–	–	–	–	–	–	–	–	2
	1215	6	2	–	–	1	–	–	–	–	–	–	9
	1340	2	1	–	–	–	–	–	–	–	–	–	3
Quartzite, Jasp.:	4000	1	–	–	–	–	–	1	–	1	1	–	4
Provenience Totals:		150	39	10	0	3	0	1	4	1	2	0	210
PROVENIENCE 2													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3523	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	4	1	–	1	–	–	–	–	–	–	–	6
	3700	3	1	–	–	–	–	–	–	–	–	–	4
Chert:	1030	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1340	1	1	–	–	–	–	–	–	–	–	–	2
Provenience Totals:		11	3	0	1	0	0	0	0	0	0	0	15
PROVENIENCE 3													
Obsidian:	3520	10	1	–	–	–	–	–	–	–	–	–	11
	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3526	3	2	–	–	–	–	–	–	–	–	–	5
	3525	2	2	–	–	–	–	–	–	–	–	–	4
	3530	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3701	27	8	–	–	–	–	–	2	–	–	–	37
	3700	34	6	–	1	2	–	–	–	–	–	–	43
	3030	1	1	–	–	–	–	–	–	–	–	–	2
	3050	24	1	2	–	–	–	–	–	–	–	–	27
	3401	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1051	2	–	–	–	–	–	–	–	–	–	–	2
	1090	3	–	–	–	–	–	–	–	–	–	–	3
	1030	2	–	–	1	–	–	–	–	–	–	–	3
Chalcedony:	1052	–	2	–	–	–	–	–	–	–	–	–	2
	1053	1	–	–	–	–	–	–	–	–	–	–	1

TABLE 9.39 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
	1215	3	–	–	–	–	–	–	–	–	–	–	3
	1310	1	–	–	–	–	–	–	–	–	–	–	1
	1340	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	1501	1	1	–	–	–	–	–	–	–	–	–	2
Provenience Totals:		122	24	2	2	2	0	0	2	0	0	0	154
PROVENIENCE 4													
Obsidian:	3520	10	1	–	–	–	–	–	–	–	–	–	11
	3523	7	1	1	1	–	–	–	–	–	–	–	10
	3526	14	5	–	–	–	–	–	–	–	–	–	19
	3525	2	1	–	–	–	–	–	–	–	–	–	3
	3530	6	1	–	–	–	–	–	–	–	–	–	7
	3510	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3701	145	23	–	2	3	–	–	1	–	–	–	174
	3700	58	8	–	–	–	–	–	–	–	–	–	66
	3030	1	–	–	–	–	–	–	–	–	–	1	2
	3050	22	8	–	–	–	–	–	–	–	–	1	31
	3401	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1050	2	–	–	–	–	–	–	–	–	–	–	2
	1051	5	–	–	–	–	–	–	–	–	–	–	5
	1070	1	–	–	–	–	–	–	–	–	–	–	1
	1073	1	1	–	–	–	–	–	–	–	–	–	2
	1090	6	–	–	–	–	–	–	–	–	–	–	6
	1030	7	1	–	–	–	–	–	–	–	–	–	8
Chalcedony:	1053	11	1	1	–	–	–	–	–	–	–	–	13
	1091	10	3	–	–	–	–	–	–	–	–	–	13
	1214	1	–	–	–	–	–	–	–	–	–	–	1
	1215	11	5	–	–	–	–	–	–	–	–	–	16
	1310	1	–	–	–	–	–	–	–	–	–	–	1
	1340	2	1	–	–	–	–	–	–	–	–	–	3
Silicified Wood:	1112	1	–	–	–	–	–	–	–	–	–	–	1
	1113	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	2	–	–	–	–	–	1	–	1	–	–	4
	4001	1	–	–	–	–	–	–	–	–	–	–	1
	1501	1	–	–	1	–	–	–	–	–	–	–	2
Provenience Totals:		332	60	2	4	3	0	1	1	1	0	2	406
PROVENIENCE 5													
Obsidian:	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3524	2	1	–	–	–	–	–	–	–	–	–	3
	3526	1	1	–	–	–	–	–	–	–	–	–	2
	3525	2	–	–	–	–	–	–	–	–	–	–	2
	3530	2	–	–	–	–	–	–	–	–	–	–	2
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	6	3	–	–	–	–	–	1	–	–	–	10
	3700	34	12	–	–	1	–	–	–	–	–	–	47
	3730	1	–	–	–	–	–	–	–	–	–	–	1
	3050	15	6	–	–	–	–	–	–	–	–	–	21
Chert:	1090	4	1	–	–	–	–	–	–	–	–	–	5
Chalcedony:	1053	2	1	–	–	–	–	–	–	–	–	–	3
	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1214	1	–	–	–	–	–	–	–	–	–	–	1
	1215	1	–	–	–	–	–	–	–	–	–	–	1

TABLE 9.39 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Quartzite, Jasp.:	4000	1	-	–	–	–	–	–	–	–	–	–	1
	1501	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		77	25	0	0	1	0	0	1	0	0	0	104
PROVENIENCE 6													
Obsidian:	3520	8	–	–	–	–	–	–	–	–	–	–	8
	3523	3	1	–	–	–	–	–	–	–	–	–	4
	3526	14	1	–	–	–	–	–	–	–	–	–	15
	3525	1	–	–	–	–	–	–	–	–	–	–	1
	3530	3	1	–	–	–	–	–	–	–	–	–	4
	3510	1	2	–	–	–	–	–	–	–	–	–	3
Basalt:	3701	60	12	2	1	2	–	–	–	–	–	–	77
	3700	33	9	–	–	–	–	–	–	–	–	–	42
	3050	16	2	–	–	–	–	–	–	–	–	–	18
Chert:	1050	2	–	–	–	–	–	–	–	–	–	–	2
	1051	4	–	–	–	–	–	–	–	–	–	–	4
	1070	1	1	–	–	–	–	–	–	–	–	–	2
	1090	5	–	–	–	–	–	–	–	–	–	–	5
	1030	9	–	–	–	–	–	–	–	–	–	–	9
Chalcedony:	1052	–	1	–	–	–	–	–	–	–	–	–	1
	1053	9	2	–	–	–	–	–	–	–	–	–	11
	1091	9	3	–	–	–	–	–	–	–	–	–	12
	1215	5	1	–	–	–	–	–	1	–	–	–	7
	1310	1	–	–	–	–	–	–	–	–	–	–	1
Silicified Wood	1113	4	1	–	–	–	–	–	–	–	–	–	5
	1140	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	–	1	–	–	–	–	–	–	1	–	–	2
	1501	1	–	–	–	–	–	–	–	–	–	–	1
	1502	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		192	38	2	1	2	0	0	1	1	0	0	237
PROVENIENCE 7													
Obsidian:	3520	11	1	–	–	–	–	–	–	–	–	–	12
	3523	5	–	–	–	–	–	–	–	–	–	–	5
	3524	3	1	–	–	–	–	–	–	–	–	–	4
	3526	2	1	1	–	–	–	–	–	–	–	–	4
	3525	3	1	–	–	–	–	–	–	–	–	–	4
	3530	4	1	–	–	–	–	–	–	–	–	–	5
	3510	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3701	72	20	1	1	–	–	–	–	–	–	–	94
	3700	179	34	9	–	2	–	–	–	–	–	–	224
	3030	2	–	–	–	–	–	–	–	–	–	–	2
	3050	60	6	4	–	1	–	–	–	–	2	–	73
Chert:	1050	2	–	–	–	–	–	–	–	–	–	–	2
	1051	4	2	–	–	–	–	–	–	–	–	–	6
	1070	–	1	–	–	–	–	–	–	–	–	–	1
	1090	6	1	1	–	–	–	–	–	–	–	–	8
	1075	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1053	2	2	–	–	–	–	–	–	–	–	–	4
	1091	15	7	1	–	–	–	–	–	–	–	–	23
	1214	–	1	–	–	–	–	–	–	–	–	–	1
	1215	2	–	–	1	–	–	–	–	–	–	–	3

TABLE 9.39 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
	1340	1	–	–	–	–	–	–	–	–	–	–	1
Silicified Wood:	1110	–	1	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		377	80	17	2	3	0	0	0	0	2	0	481

venience locale within which they were found.

Despite this interprovenience variability in stage of manufacture, the tool assemblages recovered from different proveniences were remarkably similar in content, although the number of tools varied considerably. Proveniences 1, 4, 6 and 7 exhibited evidence of utilization of between 18 and 27 tools each. Proveniences 3 and 5 exhibited only eight and three tools respectively, and Provenience 2 contained no evidence of tool utilization.

With the exception of Provenience 2, all provenience locales were characterized by evidence of biface utilization. The kinds of activities for which debitage was utilized seemed to be very similar throughout all proveniences as well. Concave-convex edges and projections were generally absent from the assemblages, and the relative frequencies of concave, straight and convex edges were generally similar in proportion. Wear patterns exhibited by edges were almost entirely indicative of unidirectional scraping usages which had resulted in no rounding or polish of the edge perimeters, and the ranges of edge angles were remarkably similar between assemblages.

This seeming uniformity in the kinds of activities undertaken through use of bifaces and debitage is intriguing for two reasons. The narrow range of activities indicated throughout the entire site location is unique when contrasted to other nonstructural site locations within the project area, each of which is characterized by overall tool assemblages which reflect considerable diversity in task-specific usages. In a similar sense, interprovenience variability among activities performed with such tools at LA 12444 is extremely uniform when contrasted with interprovenience variability among activities reflected at other nonsturctural site locations.

It can be suggested that the degree of uniformity in tool usage at LA 12444 minimally reflects a very limited set of procurement, processing and consumption contexts which conditioned human occupation of the site. The overall volume of debitage and small angular debris recovered, however, indicates that such occupation was recurrent in nature.

No direct evidence of species procured or consumed at the site was found. The single bone fragment recovered could only be identified as to either *Ovis Capra* spp., and may well represent a relatively modern domesticated individual. Milling implements were recovered from four provenience locales, and were few in number. Three of those locales exhibited evidence of hearth utilization, and only two (Proveniences 4 and 6) exhibited any evidence of possible hearth features.

LA 12447

During survey, LA 12447 was thought to represent a multicomponent Archaic-Anasazi site location. After testing, this assumption was neither verified nor refuted. It was situated on the east bank of the Rio Grande River in White Rock Canyon approximately 700 meters north of the mouth of Medio Canyon. The site was located on the edge of an alluvial terrace 10 meters from the river and lay at an elevation of 5290 ft. The terrace was bounded by the river on the north and a steep talus slope below the canyon wall to the south. The terrace was 100 meters wide and extended approximately 300 meters east-west along the river bank. It consisted of compacted silty alluvium deposited on top of cobbles and gravels, and was overlain by a thin layer of loose, sandy soil. This soil supported an Upper Sonoran juniper vegetative community. Snakeweed, rabbitbrush, star cactus and cholla were dominant species, in addition to junipers. The edge of the terrace was characterized by pockets of lateral erosion which resulted in a bare hardpan surface with remnants of the vegetated upper surface of the terrace between the erosional pockets. Artifactual materials were distributed on the hardpan surface at the edge of the terrace.

Methodology of Excavation

During survey two proveniences were defined: one corresponded to the presumed Archaic occupation and the other to the presumed Anasazi occupation. The latter was defined through the presence of a badly eroded rubble mound and a few ceramic fragments. The rubble appeared to be situated on a remnant of the upper vegetated terrace top soil and was surrounded by the bare hardpan of the eroded terrace edge. The second provenience consisted of a scatter of lithic debitage, firecracked rock and a few sherds which occurred on the eroded surface surrounding the rubble. It was postulated that since the lithics and firecracked rock seemed to be distributed only on the eroded lower surface, that materials from the hardpan might represent an earlier (Archaic) occupation with the masonry room and ceramics superimposed upon the firecracked rock-lithic scatter.

A 1.0m x 1.0m grid system extending 25 meters north-south and 13 meters east-west was placed over the lithic scatter and rubble area. Collections of lithic and ceramic artifacts and weights of firecracked rock were undertaken by grid unit. Within this grid, the rubble mound was assigned Feature 1 and was more extensively tested. A concentration of firecracked rock and basalt slabs was noted approximately five meters southeast of the rubble mound. This area seemed to represent an eroded hearth and was designated Feature 2.

Feature 1

A series of unshaped tabular basalt clasts was scattered over a 5m by 5m area. These clasts were intrusive to the terrace although they are available from the talus which bordered the terrace approximately 100 meters to the south. Testing in and around the rubble provided no information as to whether or not the rubble represented a badly eroded structure. It is possible that the rubble could have represented a pile of building materials for a room which was never constructed. The amount of rubble present was sufficient to construct a single small room.

A charcoal stain was uncovered in the first 10cm of a test trench in the eastern portion of the rubble area. The limits of the stain could not be defined with certainty. Neither retaining elements nor a discernable pit were encountered, and there was no apparent relationship between the charcoal stain and the rubble.

Feature 2

A single hearth feature with an associated scatter of firecracked rock was documented 5m to the southeast of Feature 2. The hearth was not intact. Only two basalt slabs were recorded in grid G14 and no charcoal or charcoal stain was noted in the vicinity. Firecracked rock was scattered over an area roughly 4.0m x 4.0m in extent to the north and west of the hearth elements. The highest density of firecracked rock was recovered from grids D13, F12, F13 and G14. Two other high density piles of firecracked rock were documented to the southwest of the major concentration, in grids I8 and I11. The hearth elements and firecracked rock rested on the eroded hardpan surface. Lithic artifacts were concentrated in and around this hearth area.

TABLE 9.40

LA 12447—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE & TEMPER	FORM	FEATURE 1	C11	E14	F15	F18	F20	F22	G13	J5	J6	J7	K3	K5	K6	K7	L1	L8	TOTALS
Galisteo(?) B/W																			
Crystal pumice	bowl	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Unidentified redware																			
Scoria	olla	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Unidentified G/R																			
Igneous rock	bowl	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Augite latite	olla	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
Cieneguilla G-P																			
Hornblende latite	bowl*	—	—	—	—	—	—	—	—	—	1	1	—	—	—	1	—	—	3
Unidentified G/Y																			
Hornblende latite	bowl*	—	—	—	—	—	—	—	—	1	—	1	—	1	1	—	—	1	5
Scoria	olla	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1
Basalt	olla	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	2
Unidentified G-P																			
Scoria	olla	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Blind Indented Corrugated																			
Rhyolite tuff	jar	7	—	—	—	—	—	—	—	—	—	—	1	—	—	—	2	—	10
		7	1	1	1	1	1	1	1	1	1	2	1	2	1	1	2	1	26

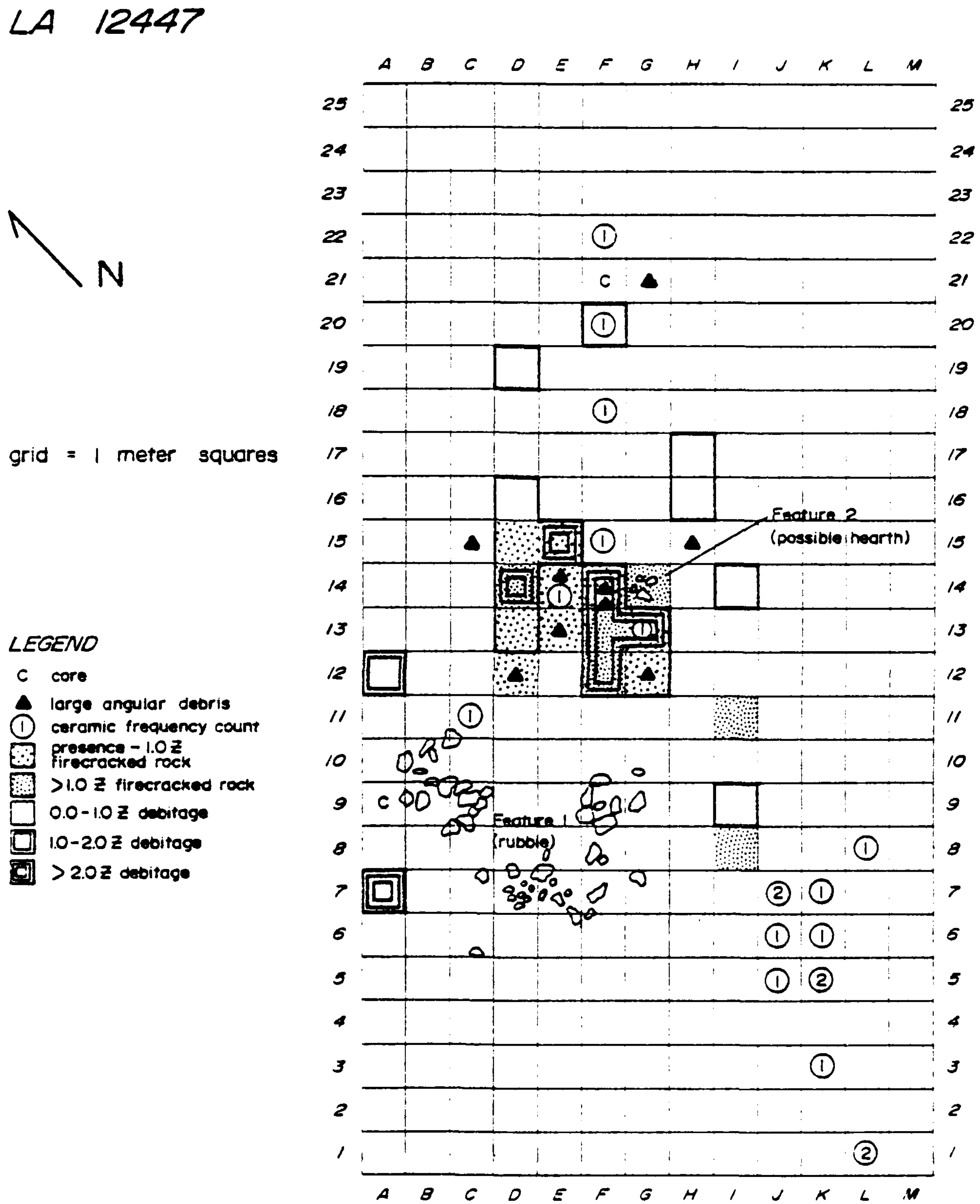

FIG. 9.27 LA 12447 Site Map

materials were collected by grid unit and some were collected during the trenching of the rubble area. These latter do not have any grid control but were rather assigned a "Feature 1" designation. As a function of this field collection procedure, two artifactual samples were created. Although they may represent portions of the same assemblage, materials from each will be discussed separately.

Feature 1 (Rubble)

Ceramic Artifacts

Seven ceramic fragments were recovered from the tests in and around the rubble area. They represented a single Blind Indented Corrugated jar, tempered with rhyolite tuff which occurs locally in the Jemez Volcanics. Thus the vessel may be of local manufacture. Three other Blind Indented Corrugated sherds with rhyolite tuff temper were recovered from grids K3 and L1 and may represent portions of the same vessel.

Lithic Artifacts

A total of 25 lithic artifacts was recovered from the tests in Feature 1. They represented debitage (76%), small angular debris (16%) and large angular debris (8%). Twenty of the 25 lithics were manufactured from a single taxon of basalt (3701). Four artifacts were manufactured from two taxons of chalcedony and one artifact was manufactured from a taxon of chert. All of these materials are locally available in the Cochiti study area. The basalt artifacts occurred in sufficient frequency to suggest that reduction activities were performed within the rubble area. None of the artifacts had been utilized as tools.

TABLE 9.41

LA 12447–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
FEATURE 1													
Basalt:	*3701*	*16*	4	–	–	–	–	–	–	–	–	–	20
Chalcedony:	1091	1	–	–	–	1	–	–	–	–	–	–	2
	1215	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1051	–	–	–	–	1	–	–	–	–	–	–	1
Feature Totals:		19	4	0	0	2	0	0	0	0	0	0	25
GRIDS													
Obsidian:	3520	3	1	–	–	–	–	–	–	–	–	–	4
	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3530	1	2	–	–	–	–	–	–	–	–	–	3
Basalt:	3701	113	20	3	1	3	–	–	–	–	–	–	140
	3700	4	–	–	–	–	–	–	–	–	–	–	4
	3030	2	–	–	–	–	–	–	–	–	–	–	2
	3050	18	2	–	–	1	–	–	–	–	–	–	21
Chert:	1050	3	1	–	–	–	–	–	–	–	–	–	4
	1051	2	2	–	–	3	–	–	–	–	–	–	7
	1090	1	–	–	–	–	–	–	–	–	–	–	1
	1071	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	4	1	–	–	–	–	–	–	–	–	–	5
	1053	19	6	–	–	–	–	–	–	–	–	–	25
	1091	6	–	–	–	1	–	–	–	–	–	–	7
	1214	–	1	–	–	–	–	–	–	–	–	–	1
	1215	11	1	–	–	1	–	–	–	–	–	–	13
	1340	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	4	1	–	1	–	–	–	–	–	–	–	6
	4001	1	–	–	–	–	–	–	–	–	–	–	1
Slate, Shale, Fr.:	4526	1	–	–	–	–	–	–	–	–	–	–	1
Grid Totals:		198	38	3	2	9	0	0	0	0	0	0	250

Grids

Both lithic and ceramic artifacts were collected from the grids on LA 12447. The highest density of lithic artifacts clustered in grids to the north and west of Feature 2, the eroded hearth. A few other high density isolated grid units occurred outside the hearth feature, one of which (A7) was in close proximity to Feature 1. Ceramic artifacts were distributed in low density over the gridded area although the majority were deposited in grids 4 to 5 meters south of the rubble.

Ceramic Artifacts

Nineteen sherds were collected from 13 different 325 grid units. No grid exhibited more than two sherd fragments. These sherds represented a minimum of nine different vessels which included: one unidentified redware olla (1 sherd); one unidentified G/R bowl (1 sherd); one unidentified G/R olla (1 sherd); one Cieneguilla G-P bowl (8 sherds); one unidentified G-P olla (1 sherd); two glaze-on-yellow ollas (3 sherds); one Galisteo (?) B/W bowl (1 sherd), and one Blind Indented Corrugated jar (3 sherds). The general absence of pottery tempered with augite latite and the presence of sherds with Scoria temper point to a middle to late 14th century period of manufacture. The atypical Galisteo (?) B/W sherd with coarse crystal pumice temper might be contemporary with the glaze pottery at this site.

Lithic Artifacts

Two hundred fifty lithic artifacts were recovered from the grids. These were distributed in 88 of the 325 units which represent a density of 2.9 artifacts per sq. meter for those grids exhibiting lithics and 0.8 artifacts per sq. meter for the grids as a whole. One cluster of lithics encompassed ten contiguous grids to the north of the hearth feature. Several other grids with high densities of lithics were distributed across the site. The majority of these lithics were debitage (79.5%) and small angular debris (15.4%). Additional artifacts included nine pieces of large angular debris, two cores and two resharpening flakes.

1. Material Selection

Twenty different material taxons were represented. The majority of the lithics were manufactured from basalt (4 taxons, 65.0%), followed by chalcedony (6 taxons, 21.3%), chert (4 taxons, 6.7%) and obsidian (3 taxons, 3.9%). The remaining lithics were manufactured from quartz, quartzite and greenstone. In general these are locally available materials in the Cochiti study area.

2. Manufacture

Two cores, one basalt and one quartzite, and nine pieces of large angular debris (4 basalt, 3 chert and 2 chalcedony) were recovered. With one exception, all of the large angular debris occurred within or in close proximity to the high density lithic concentration near the hearth feature. The cores were distributed in low density areas, one near Feature 1 and the other at the eastern edge of the site location. For the debitage and small angular debris, 20% of the basalt exhibited cortical surfaces, as did 40% of the chalcedony, 42% of the chert and 33% of the obsidian. Two basalt resharpening flakes were recovered.

3. Tool Utilization

Only three pieces of cortical debitage exhibited utilization. Two were pieces of basalt and one was chalcedony. Two edges from one of the basalt flakes exhibited bidirectional rounding. The other exhibited diagonal feathered scars and diagonal step fracture. The chalcedony tool was characterized by unidirectional rounding. Two resharpening flakes from one taxon of basalt indicate the presence and possible use of a facially retouched artifact. No other evidence of tool use within the grids was recovered.

SUMMARY

After the testing of LA 12447, it was not possible to ascertain the occupational sequence for the site location. It is possible that the eroded hearth area and much of the lithic debris reflected a Late Archaic occupation. Many such site locations have been documented in Cochiti Reservoir. It is equally possible that the hearth and lithics represented exterior activity areas for a one room Anasazi P-IV occupation.

LA 12448

LA 12448 is a nonstructural site location which was probably occupied during the late Archaic Period. It is located on the east side of the Rio Grande River in White Rock Canyon, opposite and approximately 900 meters north of Medio Canyon. The site is situated at the edge of an alluvial terrace, 16 to 20 meters from the edge of the river. This terrace is 100 meters wide and is bounded on the north and west by the river and on the south and east by a talus slope of the canyon wall. It extends 300 to 400 meters northeast-southwest along the bank of the river. The terrace is made up of a hard, compact alluvial soil which is capped by a relatively thin layer of loose, sandy soil, deposited by a combination of alluvial, colluvial and aeolian agents. This soil supports a Juniper vegetative community with junipers, cholla and blue grama grass interspersed throughout. The edge of the terrace is being eroded by the river and small arroyos which drain from the southeast. The site is located at the interface between the terrace and the current cobble and sand beach. This area is characterized by a bare, hardpan compact alluvium surface.

Surface Indications

Survey data indicated the presence of three proveniences which may have indicated two stratigraphically discrete occupation episodes. The first provenience was characterized by a dense concentration of basalt, obsidian and chert flakes with firecracked river cobbles. The concentration occurred on the hardpan in an erosional pocket at the edge of the terrace, and covered an area

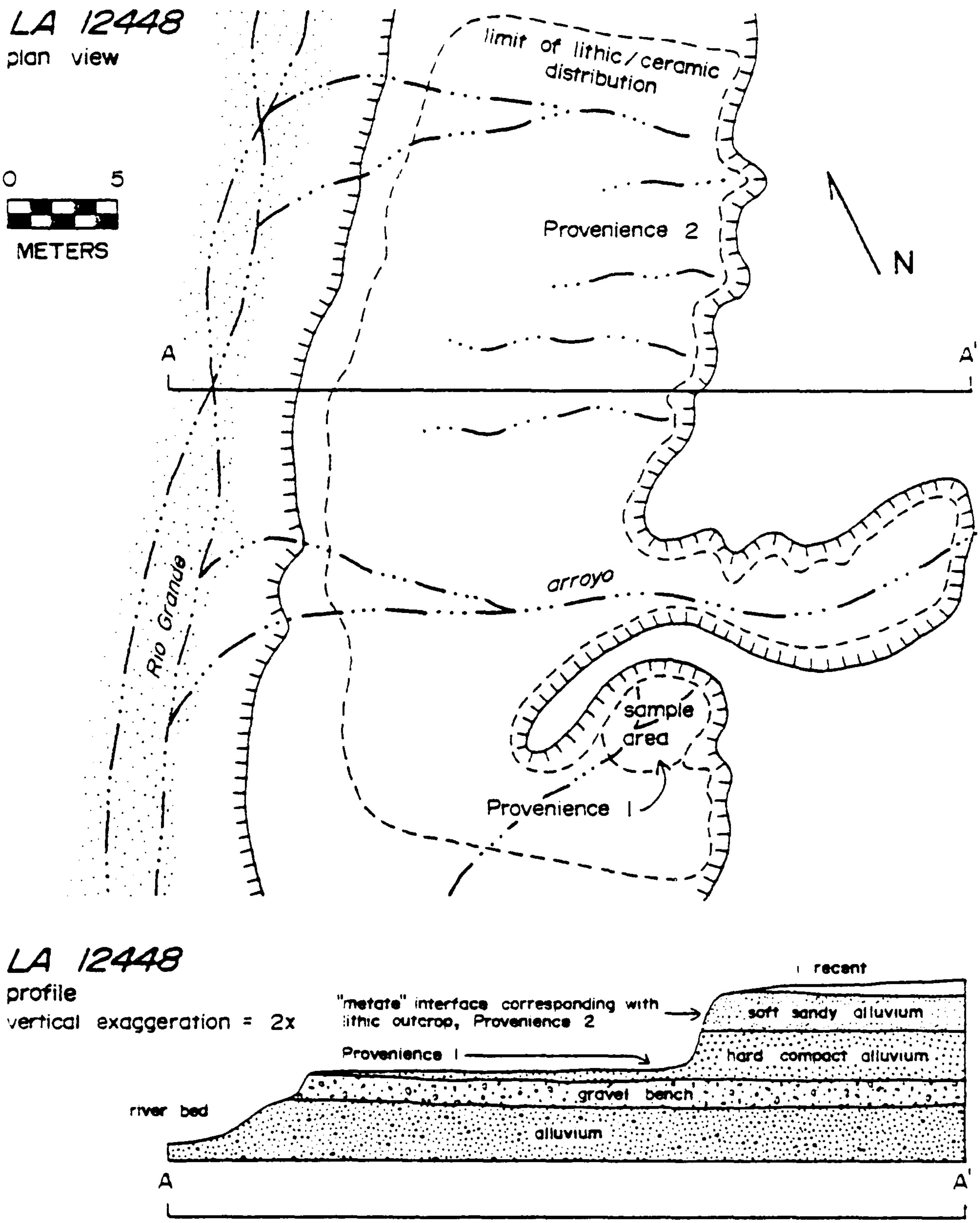

FIG. 9.28 LA 12448 Site Map

approximately 4m x 4m. Ten meters east of the eroded hearth, an arroyo cut the terrace. Exposed in this cut and along the river side of the terrace adjacent to the arroyo, was a thin scatter of flakes and a single rim sherd from an Agua Fria G/R bowl. Twenty meters east of the arroyo a large smooth cobble was exposed in the terrace edge. It was situated at the interface between the hard, compact alluvial layer and the loose sandy recent topsoil. It was thought that the stone represented an *in situ* metate from a more recent occupation than the hearth feature. Since the surficial manifestations indicated the presence of two occupation surfaces, LA 12448 was selected for excavation.

Mitigation Procedure

A 26m by 55m grid was superimposed over the entire site area to provide one meter horizontal control for testing and excavation. The concentration of flakes and firecracked rock in the western part of the site was assigned Feature 1. Three one meter grids were excavated at the edge of this provenience to expose the nature of the hearth feature. Due to the highly eroded nature of the feature, artifactual material in the vicinity of the hearth was collected as a single unit.

Twelve meters east of the arroyo another one meter grid square was excavated at the edge of the terrace to expose a vertical profile. Two other one meter units were excavated 10 and 15 meters inland of this profile cut to determine whether the stratigraphy duplicated that exposed at the terrace edge and to determine evidence of human occupation on top of the hard alluvial terrace. These tests did not reveal any extensive evidence of a lower *in situ* occupation level although a few artifacts were recovered.

Further test pits were excavated in the vicinity of the two presumed metates, one at the eastern extreme of the site, and another at the eastern edge of the arroyo mouth in the central portion of the site. Upon closer inspection, neither stone turned out to be a metate, and excavation around them was suspended.

PROVENIENCE 1

Features

Evidence of a single hearth feature (Feature 1), defined largely by the presence of 26.5 kilos of firecracked rock, was recovered in Provenience 1. This hearth was not intact and subsurface testing did not reveal information about the size, shape or constructional detail of the feature. Testing in three grid units, however, documented the presence of a dark stained stratum and/or firecracked rock at a depth of 55cm to 70cm below subdatum. No charcoal was recovered at this depth, although one small piece was recovered at a depth of 12cm. The firecracked rock covered an area roughly 5m in length and 4m in width.

Artifactual Assemblage

Lithic Artifacts

TABLE 9.42

LA 12448–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3525	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	22	4	1	2	1	3	–	–	–	–	–	33
	3050	–	3	–	–	–	–	–	–	–	–	–	3
Chert:	1090	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1215	6	1	–	–	1	–	–	–	–	–	–	8
Provenience Totals:		31	8	1	2	2	3	0	0	0	0	0	47
PROVENIENCE 2													
Obsidian:	3524	–	1	–	–	–	–	–	–	–	–	–	1
	3525	1	1	–	–	–	–	–	–	–	–	–	2
Basalt:	3701	1	1	–	–	–	–	–	–	–	–	–	2
	3050	–	1	–	–	–	–	–	–	–	–	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		3	4	0	0	0	0	0	0	0	0	0	7

Forty-seven lithic artifacts were recovered from Provenience 1. The majority were debitage (63%) and small angular debris (23%). Three choppers, two cores and two pieces of large angular debris were recovered as well. All of the larger artifacts (choppers, cores and large angular debris) and 58% of the debitage and small angular debris were manufactured from a single taxon of basalt (3701). The remaining lithics were manufactured from chalcedony (1 taxon, 14%), obsidian (2 taxons, 4%), chert (1 taxon, 5%) and one other taxon of basalt (5%). These materials are locally available in the Cochiti study area.

The high frequency of cortical and noncortical debitage and small angular debris for one taxon of basalt (3701), in conjunction with the presence of two cores and one piece of large angular debris, indicates that artifact manufacture was undertaken within the provenience locale. Although several pieces of debitage and small angular debris, in addition to one piece of large angular debris, were documented for one taxon of chalcedony (1215), these do not occur in frequencies substantial enough to suggest that reduction activities were being performed routinely.

Three choppers were recovered from the provenience, all exhibiting battering on one edge. While no facially retouched artifacts were recovered, one retouch flake suggests the presence and possible use of a facially retouched basalt artifact. The majority of tools recovered from the provenience were pieces of debitage or small angular debris.

A total of 13 of the 49 pieces of debitage and small angular debris exhibited use. This represents a 27% utilization figure for the provenience. These 13 artifacts exhibited 18 utilized edges, two of which had been unidirectionally retouched. Ten of these artifacts were basalt (15 edges); two were chalcedony (2 edges) and one was obsidian (1 edge). Little diversity in outline shape was exhibited, and no projections were observed. Nine of the edges were straight; five were concave; three were convex, and one was concave-convex. Five of the edges exhibited bidirectional rounding; two of these were also characterized by polish. Fifteen edges exhibited step fracture.

PROVENIENCE 2

Provenience 2 was defined as an area exposed by the erosional cut toward the center of the site. Test pits in three noncontiguous grid units were made to determine whether two occupational surfaces were present at the site location. Although a few lithics were recovered from these tests, no occupation surface was defined.

Artifactual Assemblage

Test excavations in these grid units, located ca. 24 meters northeast of Provenience 1 resulted in recovery of three pieces of debitage, four pieces of small angular debris and a single glaze-on-yellow olla body sherd exhibiting scoria temper. The lithic artifacts were manufactured from two taxons of obsidian (3 artifacts), two taxons of basalt (3 artifacts) and a single taxon of chert (1 artifact). None of the artifacts exhibited any evidence of utilization.

PROVENIENCE 3

A third provenience was defined at LA 12448 based upon the presence of a supposed metate. When this portion of the site was reexamined, it was determined that the cobble did not represent a metate. Based upon this determination, testing in Provenience 3 was terminated. No collections were made.

SUMMARY

During survey it was felt that LA 12448 represented a stratified nonstructural site location and consequently was selected for further investigation. After testing several areas in the site, no clear evidence verifying stratified occupations was recovered. Only one area, Provenience 1, which exhibited an eroded hearth area and a concentration of lithic artifacts, provided evidence of localized activities. The few lithic artifacts and single sherd recovered from the other portions of the site provide little information about the character of the occupation. Although no artifacts diagnostic of a particular period were recovered, the absence of ceramics suggests a Late Archaic date of occupation for Provenience 1.

LA 12449

LA 12449 was a multicomponent site location. One component consisted of a single habitation structure (Room 1), three corrals and an associated trash midden. This component dated to the Late Territorial phase (A.D. 1890-1905) of the Historic Period. During the course of testing this site, evidence of a possible Anasazi P-IV component was recovered, although the exact character of this earlier occupation could not be ascertained.

LA 12449 was located on the east side of the Rio Grande River in White Rock Canyon approximately 1.5 kilometers north of Medio Canyon. It was situated on a bench 50 meters from the river at an elevation of 5300 ft. LA 12449 was located in the Juniper vegetative community. Dominant vegetation included snakeweed, cholla, grama grasses, juniper and several hackberry trees.

Method of Excavation

The primary intent of the program of mitigation for LA 12449 was to document the site location through limited excavation. Testing began with a count of metal can types present on the surface of the site and a collection of representative materials from areas not to be excavated. A 1.6m x 1.7m test pit was excavated outside the doorway of the room to examine the nature of the wall footings and to define any exterior occupation surface. The test was extended through the doorway to the interior of the room and along the north wall, terminating at the west wall. Later, the remaining portion of the interior of the room was excavated. Both the interior and exterior of the room were excavated to sterile. A

trash dump area to the north of the room was tested to determine depth and type of deposition.

Prehistoric Occupation

Ceramic and lithic artifacts recovered during the test excavations of LA 12449 provide possible evidence for an Anasazi P-IV occupation. Unfortunately, the field excavation program did not result in a clear definition of the nature of this occupation.

All prehistoric materials were collected in disturbed contexts, for example, in the fill of the habitation structure intermixed with metal and glass materials. Lithics and ceramics were also noted in the mortar of the walls of the structure. While it is clear that the ceramics were manufactured during the P-IV phase of the Anasazi Period, it is possible that they could have been collected and curated by the occupants of the historic structure. The high frequency of sherds makes this interpretation unlikely. Lithic artifacts may similarly have been collected and curated, although lithics have been associated with other Historic Period sites in the canyon (see LA 9138, LA 12161, LA 12465, LA 12507). With the exception of LA 12465, these sites predate LA 12449 by over 100 years. In addition, there is direct and indirect evidence of the usage of a wide variety of metal tools at LA 12449, including a pocket knife, sheep shears, firearms, axes, saws and hammers. The necessity of manufacturing lithic tools in addition to this variety of metal tools is questionable. Thus it is probable that many of the lithic artifacts were manufactured prehistorically and hence will be discussed below.

Ceramic Artifacts

A total of 161 sherds was recovered from LA 12449. The majority of these (118 sherds, 73.3%) were recovered from the fill in Room 1. Thirty-six (22.4%) were collected from a test pit adjacent to the room. Seven (4.3%) were recovered from a trash midden three meters north of the room. With the exception of three sherds (two from an unidentified historic redware bowl and one from an historic carbon-painted polychrome bowl), the majority of these ceramics appeared to have been manufactured during the early P-IV phase (14th and 15th centuries). Types of ceramics represented included Agua Fria G/R and Largo G/Y vessels. Sherds from the painted ware bowls outnumbered the painted ware ollas. The number of utility ware sherds were significantly higher for this assemblage (64%) than for assemblages from other P-IV sites in the reservoir area. There were no observable differences in the distribution of the ceramics across the site location.

TABLE 9.43

LA 12449

CERAMIC DISTRIBUTION BY PROVENIENCE

Ceramic Type	Form	Room 1 levels 0, 1	Exterior test	Midden	Total
Santa Fe B/W	bowl	1	1	–	2
Agua Fria G/R	bowl	–	1	–	1
Glaze A red	bowl	5	4	–	9
Glaze A (?) red	bowl	–	5	–	5
	olla	21	1	6	28
Glaze A (?) yellow	bowl	11	1	–	12
	olla	2	1	–	3
Largo G/Y	bowl	1	–	–	1
Unid. G-P	olla	1	–	–	1
Unid. white-slip	bowl	1	–	–	1
Unid. redware (Historic)	bowl	–	2	–	2
Carbon polychrome (Historic?)	bowl	–	2	–	2
Plainware	jar	14	8	–	22
Corrugated oblique	jar	–	8	–	8
Blind indented corrugated	jar	61	2	1	64
Totals		118	36	7	161

Lithic Artifacts

A total of 148 lithic artifacts was recovered from LA 12449. Seventy-three were recovered from the fill in Room 1 and 73 sherds were recovered from the test pit near the doorway of the room. The remaining two lithics were recovered from the surface collection. The majority of the lithic artifacts were debitage (77.5%) and small angular debris (21.8%).

1. Material Selection

Twelve material taxons were represented from the lithics recovered in the room and ten from the test pit. With the exception of three taxons, the material distribution between the two samples was identical. The largest percentage of the assemblage was manufactured from basalt (72.1%, 4 taxons). One basalt taxon (3700) made up 56.5% of the total assemblage. Chalcedony comprised 15.0% of the assemblage (5 taxons), followed by obsidian (8.8%, 2 taxons), jasperoid (2.7%, 1 taxon) and chert (1.4%, 1 taxon). While specific source areas have not been documented for 3700 basalt, it most probably outcrops locally. The majority of the remaining taxons are locally available.

2. Manufacture

The debitage and small angular debris for 3700 basalt occur in sufficient numbers to suggest limited manufacturing activities. The frequency of cortical surfaces for the basalt lithics, however, is low (14.7%), which may be indicative of secondary rather than primary reduction. Although one bipolar flake was recovered, the majority of the lithics were manufactured employing a freehand percussion detachment of debitage technique.

3. Tool Utilization

None of the debitage or small angular debris had been utilized. Two pieces of pumice, which may date to the historic occupation, exhibited use.

TABLE 9.44

LA 12449—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, LEVELS 0, 1													
Obsidian:	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3530	5	–	–	–	–	–	–	–	–	–	–	5
Basalt:	3700	25	15	–	–	–	–	–	–	–	–	–	40
	3030	5	1	–	–	–	–	–	–	–	–	–	6
	3050	1	–	–	–	–	–	–	–	–	–	–	1
	3430	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1215	8	1	–	–	–	–	–	–	–	–	–	9
Quartzite, Jasp.:	1501	4	–	–	–	–	–	–	–	–	–	–	4
Room Totals:		56	17	0	0	0	0	0	0	0	0	0	73
TEST OUTSIDE ROOM 1													
Obsidian:	3530	2	2	–	–	–	–	–	–	–	–	–	4
Basalt:	3700	35	9	–	–	–	–	–	–	–	–	–	44
	3030	6	–	–	–	–	–	–	–	–	–	–	6
	3050	6	1	–	–	–	–	–	–	–	–	–	7
	3430	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1090	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	2	1	–	–	–	–	–	–	–	–	–	3
	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	1	1	–	–	–	–	–	–	–	–	–	2
	1215	1	–	–	–	–	–	–	–	–	–	–	1
	1340	1	1	–	–	–	–	–	–	–	–	–	2
Totals:		58	15	0	0	0	0	0	0	0	0	0	73

HISTORIC OCCUPATION

The historic component of LA 12449 consisted of one habitation structure, three corrals and a trash dump area. These will be described below.

Architecture

Room 1;

Shape: Rectangular surface structure.

Orientation: The long axis of the structure was true north and parallel to the river. The doorway opened to the east.

Condition: The structure was essentially intact with portions of the roof still present. The site appeared to have been undisturbed. The southern wall and portions of the southwest corner (including the fire hearth) had collapsed. Evidence of partial destruction by fire was apparent in places near the southwest corner.

Interior Room Dimensions:

	Length	Width	Height
North	3.40m	.45m	1.70m
South	3.30m	.35m	1.50m
East	3.40m	.36m	1.43m
West	3.10m	.35m	1.60m

Walls: All four walls were of similar construction and are described together below.

Type of Elements: Upright juniper posts were used to support the roof. The walls were constructed from local angular basalt clasts.

Size of Elements: The upright juniper posts were between 25cm and 30cm in diameter and ranged from 1.43m to 1.70m in height. Basalt wall elements rarely

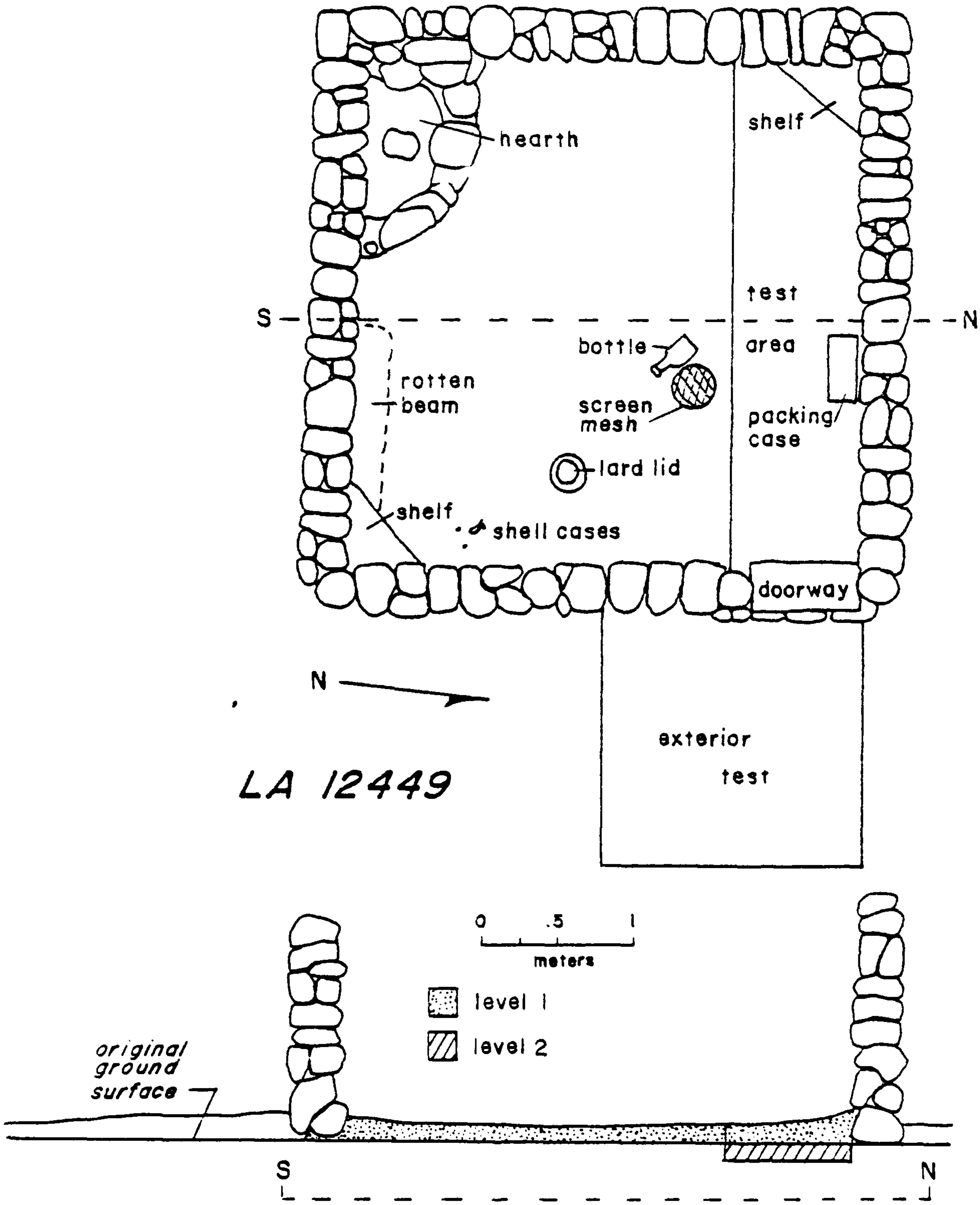

FIG. 9.29 LA 12449–Room 1, plan view and cross section

exceeded 10cm x 20cm.

Construction and Placement of Elements: Construction of the masonry structure was roughly similar to a ramada, with upright juniper posts set into the soil to a depth of 40cm to 45cm below ground surface, supporting the roof. The masonry sections of the walls were built up between the uprights and did not bear any roof weight. Elements were irregularly stacked in a matrix of adobe mortar. The few tabular elements present were horixontally laid with their long axes parallel to the long axis of the wall.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: No vertical coursing was evident due to the irregular placement of wall elements. The walls were one element wide.

Chinking: No chinking was present.

Corners: Upright posts were in the corners. Masonry walls abutted the posts.

Plaster: Occasional patches of plastering were found on both interior and exterior walls.

Entrances: The door was located in the northeast corner of the structure facing the talus to the east. The door measured .66m x 1.39m and was constructed of rough sawn lumber (2 x 8 inches) and wire nails. The door was missing but opened into the structure on commercial barn type hinges.

Window: A possible window was located centrally in the east wall also facing the talus. The window was small, horizontally 40cm and 7cm vertically. It occurred at the intersection of a juniper upright and the masonry wall. A short thick lintel was laid in the fork of the upright.

Floors: The floor was encountered at 15cm. The floor was not excavated into the ground surface. It was unprepared and characterized by a thin layer of charcoal flecked fill.

Roofing: The roof was flat with juniper vigas still intact resting in the fork on top of each juniper upright.

Interior Features:

Hearth: A beehive type hearth was located in the southwest corner of the room through construction of a semi-circular masonry wall which abutted the south and west walls of Room 1. The interior dimensions were 60cm east-west x 30cm north-south. A layer of masonry was added to face a portion of the west wall inside the hearth. The bottom of the hearth interior was elevated slightly above floor level and the standing height of the front of the hearth was 35cm above floor level. A flat surfaced stone was placed flush with the sill of the firebox and centered. It was probably used as a pot rest. The hearth apparently set this corner of the structure on fire, as charred beams were present above the southwest corner. The south wall and the southwest corner probably collapsed as a result of the fire. No cultural material was recovered from the hearth.

Shelves: Two shelves were built into the northwest and southeast corners of the structure (see Fig. 9.28). Masonry was laid directly on the ends of the shelves to hold them in place. Artifacts of temporal association with the cultural materials found on the floor were collected from the shelves.

Cupboard: A cupboard made of a packing box was hung with bailing wire from the roof beam parallel and adjacent to the north wall.

Nail Hangers: Several nails were found along the bond beams, some of which had wire or leather hanging from them. These may have been used for hanging other items.

Room Fill: The depth of the fill did not exceed 15cm and averaged 10cm to 11cm. All fill above the floor was homogeneous in nature. Charcoal was found on the floor and throughout the fill and was probably the result of the fire in the southwest corner. Lithic artifactual debris that appeared to have washed from a site on the bench directly above LA 12449 was found throughout the fill and strata below the Territorial occupation level. Lithic debitage was also found in the wall mortar. The lithics below the floor represent an earlier archeological manifestation of an unknown nature. Other cultural materials recovered from the room fill included nails, cans, a buckle, metal, glass, a wood screw and cloth in the mortar.

Rubble: The height of the south wall if reconstructed was 1.50m.

Exterior Fill: An exterior test was excavated outside the door in the east wall to examine the wall footings and occupation surface in front of the structure. Cultural material found on the exterior of Room 1 included sheep shears, a shoe, a can, some lithics and bone.

Exterior Features:

Trash Midden: A dump area was located 3 meters to the north of the structure. It consisted of a scatter of cans approximately 2m x 5m. A test pit was excavated into the dump to determine depth. It was found to be surficial in nature. A sample of the can types represented were collected and a count of the entire assemblege was recorded.

Corrals: A corral complex was located 7 meters west of Room 1. Three contiguous enclosures were located within the corral area. All walls were similarly constructed from brush and upright juniper posts which were wired together. The major portion of the corral was a rectangular enclosure measuring 16 meters north-south by 9 meters east-west which was divided evenly into two compartments by an east-west wall. A third semi-circular enclosure measuring 5m in diameter was attached to the southern end of the east wall. The corrals did not appear to be very substantial and were heavily reduced and overgrown.

Artifactual Assemblages

The artifactual materials associated with the historic occupation of LA 12449 were collected from four different areas sampled during the excavation. These are: 1) interior fill of Room 1 (levels 0, 1); 2) a 1.6m x 1.7m test pit outside the doorway of Room 1; 3) a trash midden to the north of the room, and 4) surface collections from untested areas of the site. Differences in the distribution of the artifactual remains between the sampled areas will accompany the artifactual descriptions where appropriate.

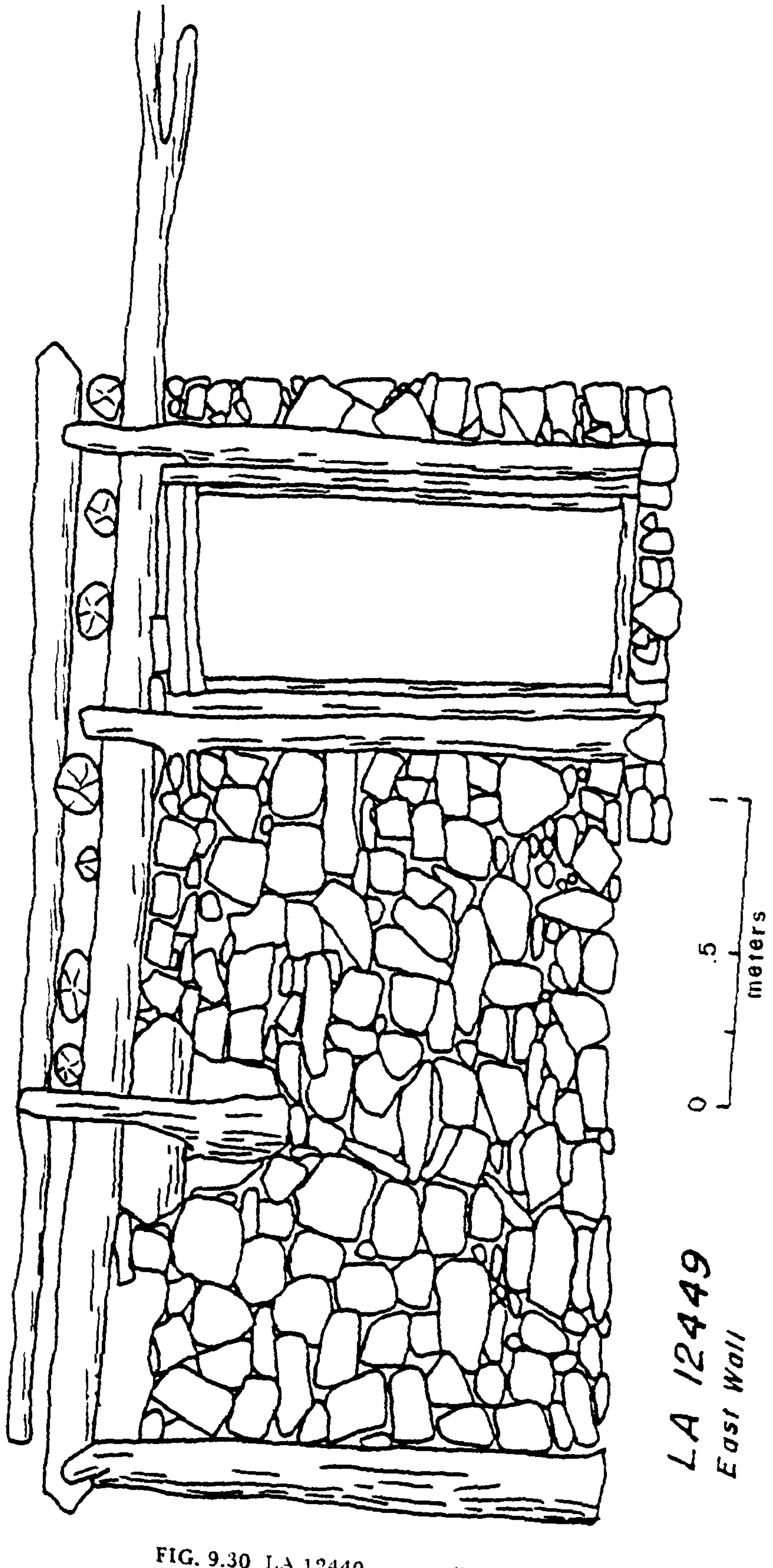

FIG. 9.30 LA 12449—east wall of Room 1

Ceramic Artifacts

Three sherds were recovered from the test pit outside Room 1 which were manufactured in the 18th or 19th centuries. These include two sherds from an unidentified (untyped) historic redware bowl and one sherd from a carbon polychrome bowl. These ceramics appear to predate the datable metal and glass items recovered from the site, although similar untyped historic ceramics occur on other late 19th - early 20th century sites (see LA 12465).

Lithic Artifacts

Although some or all of the 148 lithics recovered from LA 12449 may date to the historic occupation, these artifacts have been described with the prehistoric materials.

Bone Artifacts

A fragment of a bone pendant was recovered from the fill in Room 1. The pendant had been manufactured from a long bone shaft fragment of a medium-large animal. The bone was highly polished and had a drilled hole. The pendant had been cut with a metal saw.

Historic Artifacts

A large number of industrially manufactured metal and glass items were recovered from LA 12449. These materials are indicative of a wide range of activities. The most common items were food containers, clothing and miscellaneous building materials. Although food containers were recovered from all sampled areas of the site, the majority were concentrated in the trash midden. Clothing items were distributed in greater frequency in the interior of the room and were absent in the trash midden area. Wire nails, staples and other miscellaneous metal items were distributed both in the room and on the surface, but they were absent from the trash midden.

Room 1, fill (levels 0, 1) and shelves

Metal, glass and leather items were recovered from the room fill and shelves. Clothing items occurred most frequently. These included grommets and rivets from shoes and pants, a leather sole fragment from a shoe, and a suspender buckle. Other materials were food containers, such as fragments from a glass liquor bottle, a lid from a lard can, and a cap from an unidentified food can. Other items reflected "building" activities, and included nails, a staple, a railroad spike and miscellaneous wire fragments. One cartridge case and six percussion caps were evidence of the usage of two different firearms. The historic items recovered thus indicate a wide range of activities.

Test outside Room 1

A 1.6m x 1.7m test pit was placed outside the door along the east wall of Room 1 to examine the wall footings and occupation surface. No occupation surface, however, was defined. Metal and leather items were recovered. Clothing items included metal button fragments, an eyelet and a piece of leather. Other items were nails and miscellaneous wire fragments.

Trash Midden

A 2m x 3m trash dump area was located north of the room. It was tested and found to be surficial. A sample of the can types represented was collected and a count of the entire assemblage was recorded. The majority of cans were food containers.

Surface Collections

Collections were made from portions of the site which were not tested or excavated. Few items were collected, the majority of which were historic materials. Only two lithics, one piece of debitage and one piece of small angular debris, were collected. The remaining materials were historic artifacts, including a lard bucket, two condensed milk cans, and fragments from an amber glass liquor bottle. One tobacco tin was also collected. Metal clothing buttons and broken sheep shears were recovered as well.

Faunal Materials

The faunal sample recovered from LA 12449 was represented by 20 identifiable bone fragments. Five were recovered from the fill in Room 1 (level 1) and fifteen from the exterior test near the doorway of the room. There were no apparent differences in kinds of fauna recovered from the room and exterior test.

1. Minimum Number of Individuals

A minimum of three animals was identified from LA 12449. Of these, one was a domestic sheep or goat. The second was identified as either a sheep or goat or a pronghorn antelope. The third individual was an Artiodactyla. Although *Ovis* spp./ *Capra* spp. and *Antilocapra* spp. are both Artiodactyls, the age classification of the Artiodactyla specimen indicates that it is a different individual.

2. Age of Animals

Ovis spp./*Capra* spp.	1	Adult
Ovis spp./*Capra* spp. or *Antilocapra* spp.	1	Unknown
Artiodactyla	1	Immature

3. Butchering Strategy

a. Meat Packages

The Artiodactyla classification was subdivided into adult and immature individuals. Once the division was made, the elements represented indicated that both high and low muscle mass meat packages were present for *Ovis* spp./*Capra* spp., suggesting that the animal was butchered and consumed at the site. The adult Artiodactyla was represented by one fragment, making further speculation difficult. The *Ovis* spp./*Capra* spp./*Antilocapra* spp. individual is represented by a mandible and may overlap the large mammal elements, rib and long bone shaft fragment. Again, the size of the sample limits further speculation.

b. Marrow Cracking

TABLE 9.45

LA 12449—HISTORIC MATERIALS

PROV.	ITEM	FREQUENCY	DATE AND REFERENCE	
Room 1, level 0	"Patterson's" Tuxedo tobacco can	1	post 1900	Fontana *et al.* 1962: 72-73
Room 1, level 1	grommet (possible shoe eyelet)	1	unknown	
	rivet (from pants)	1	unknown	
	rivet button	2	unknown	
	buckle (to adjust suspenders)	1	unknown	
	leather sole fragment with 4 shoe nails	1	unknown	
	boot fragment with metal eyelets and grommets	1	unknown	
	leather strap with rivet	1	unknown	
	leather strap fragment	2	unknown	
	leather strap (lace fragment)	1	unknown	
	nails (wire)	10	post 1895	Fontana *et al.* 1962:62
	nails (square)	3	1830-present	Fontana *et al.* 1962:54
	cartridge case (WRA Co. 3855)	1	ca. 1900 pre 1900	See Barnes 1972
	percussion caps	6	unknown	
	pocket knife "spring"	1	unknown	
	pocket knife "bolster"	1	unknown	See Paterson 1958:4
	can lid (lard)	1	unknown	
	cap from hole-in-top can	1	1860-1922	Fontana *et al.* 1962: 70-73
	railroad spike	1	post 1879	arrival of railroad in Southwest
	screen with wire clamps	1	unknown	
	staple	1	unknown	
	wire fragments	2	unknown	
	liquor bottle fragments	46	1880-1903	Kendrick 1970:47-48
Wall Shelves				
	Nail (wire)	1	post 1895	Fontana *et al.* 1962:62
	buckle (belt)	1	unknown	
	wood screw	1	unknown	
	cloth fragment (probably from a Bull Durham sack)	1	unknown	
	packing box (side panel)	1	unknown	

TABLE 9.45 (con't)

PROV.	ITEM	FREQUENCY	DATE AND REFERENCE	
Test Pit	lard bucket	1	unknown	
	leather fragment	1	unknown	
	metal button fragments	3	unknown	
	nail fragment (cut)	2	1830-present	Fontana *et al.* 1962:54
	nails (wire)	6	post-1895	Fontana *et al.* 1962:62
	wire fragments (copper)	2	unknown	
	eyelet metal (probably from boots)	1	unknown	
	metal object (unknown)	1	unknown	
Surface Collection	boot fragment	1	unknown	
	sheep shears (broken)	1	unknown	
	metal button (clothes)	1	unknown	
	tobacco can lid	1	post-1900	Fontana *et al.* 1962: 72-73
	can (hole in top variety)	1	unknown	
	amber liquor bottle glass fragments	14	1880-1903	Kendrick 1970:47-48
	condensed milk cans	2	post 1885	Fontana *et al.* 1962:74

TABLE 9.46

LA 12449 TRASH MIDDEN: CAN COUNT

ITEM	Medium	Large	Small
Baking Powder	2	–	–
Vegetable	15	2	11
Lard	3	3	–
Condensed Milk	4	–	–
Tobacco Hip Tins	2	–	–
Other	–	–	2

TABLE 9.47

MEAT PACKAGES AND LONG BONE SHAFT FRAGMENTS
FOR MINIMUM NUMBER OF INDIVIDUALS

		ELEMENTS REPRESENTED								
		LOW MUSCLE MASS				HIGH MUSCLE MASS				
TAXON	MINIMUM NUMBER OF INDIVIDUALS	Vertebrae	Pelvis	Skull	Mandible	Lower Leg	Ribs	Scapula	Upper Leg	LONG BONE SHAFT FRAGMENTS
Ovis spp./*Capra* spp.	1				3					
Ovis spp./*Capra* spp./ *Antilocapra* spp.	1				1					
Artiodactyla (immature)	1			1						
ADDITIONAL OVERLAPPING FAUNAL ELEMENTS										
Large Mammal	1						1			1
Medium–Large Mammal	1									5
Mammal	1									1
Artiodactyla (adult)	1				4		1		1	1

Number of identifiable bones: 20

Percent of long bone shaft fragments: 30%

The percentage of long bone shaft fragments recovered from LA 12449 is high, and indicates that marrow extraction may have been practiced at this site. Due to the small sample size, the extent of such a practice is unknown.

4. Butchering Cut Marks

The cut marks recorded from fauna on LA 12449 further support this site's late historic date. Of the three bones exhibiting cut marks, two were cut with a metal knife or axe, and one was cut with a metal saw. Evidence recovered from the faunal remains did not suggest that stone tools were utilized in butchering.

Botanical Materials

One roasted pinyon nut shell fragment was recovered.

SUMMARY

LA 12449 is a Historic Period site location dating to the late Territorial phase (ca. 1890-1905) which consisted of a single room house, three outlying corrals and a surface trash midden. Evidence in the form of ceramic fragments recovered from the wall mortar of the house, fill within the house, and subfloor strata indicated the presence of an Anasazi P-IV phase component within the vicinity of the site. No physical evidence of the nature of that occupation other than artifactual debris was recovered through excavation, however, and the following discussion will address the nature of the Historic Period component.

LA 12449 is clearly representative of pastoral utilization of the canyon environment, and in this respect is typical of nearly all other Territorial phase sites documented during survey of Cochiti Reservoir. The site represents a more intensive investment into architectural construction than do other Territorial phase component, in that it consists of a single masonry structure and a corral complex of three contiguous enclosures constructed from upright juniper posts which were wired together. Artifactual remains, faunal remains and relatively small corral size indicated that sheep or goats were being herded rather than cattle.

Procurement, Processing and Consumption Activities

The material evidence of subsistence related behavior at LA 12449 reflects a distinct economic articulation of the inhabitant(s) with a greater industrial nation-state. The majority of food stuffs consumed at the site location were imported as canned goods, and all implements employed for porcurement or processing for which evidence exists were industrially manufactured. In addition, evidence exists that both clothing items and constructional elements were industrially manufactured or processed as well. The site location is thus quite intriguing in that it provides considerable insight into the

TABLE 9.48

LA 12449
FAUNAL DISTRIBUTION OF
MINIMUM NUMBER OF INDIVIDUALS
BY PROVENIENCE

PROVENIENCE 1

TAXON	MINIMUM NO. OF INDIVIDUALS	ROOM 1	EXTERIOR TEST TRENCH
Domestic sheep or goat	1		X
Domestic sheep, goat or pronghorn	1		X
Artiodactyla	1	X	X

TABLE 9.49

LA 12449

BUTCHERING CUT MARKS

PROVENIENCE	LEVEL	BONE NO.	TYPE	TAXON	ELEMENT
Room 1	1	r1.1.1	a	Artiodactyla	hyoid
	1	r.1.1.4	a	Artiodactyla	rib fragment
	1	r1.1.5	d	Medium-Large Mammal	long bone shaft fragment

operation of an industrially based economic system as it is observed archeologically in a region substantially removed from major economic centers.

The materials employed in construction of facilities at the site location and manner in which they were used reflect an interesting combination of both locally available and industrially produced or manufactured elements. Primary constructional elements of the habitation structure were locally available juniper posts and basalt clasts, although a variety of odd sized pieces of milled lumber were incorporated as lintels, sills and shelves. Juniper posts and beams had been cut with a metal ax and modifications of milled lumber for incorporation into the structure had been undertaken with an ax rather than saw as well. A considerable number of nails and staipes and wire of different lengths and gauges had been employed in construction of the habitation sturcture and the corral facility. Nails in particular exhibited extreme diversity in size and manufacture, ranging from square cut to wire nails in a variety of sizes. Fence staples and a railroad spike were recovered as were pieces of packing cases.

The selection of industrially produced items incorporated into facilities at LA 12449 thus seems to reflect a strategy of scavenging and curation from a variety of sources, rather than planned purchase for construction.

The house itself included a fireplace in the southwest corner and possible evidence through the distribution of artifactual remains that a bed or sleeping area once existed along the east wall near the southeast corner. Storage features were evident as small sets of shelves built above floor level in the northwest and southeast corners of the room in addition to a cupboard made from a packing case suspended against the north wall. Several wire and leather strap hangers were suspended from the roof beams as well. Storage facilities thus seem to reflect temporary rather than long term storage needs and were not designed to accomodate substantial bulk quantity.

Consumption of foodstuffs is represented predominantly through discarded food containers, including lard cans, baking powder cans, condensed milk cans and vegetable cans. These occurred in several different sizes. A minimum of three sheep or goats had been butchered and presumable consumed at the site as well.

Despite this evidence of food consumption, very little in the way of cooking or serving activities was recovered. No serving utensils or containers were found, and the only possible cooking utensil was a lard can lid to which a piece of window screen had been clamped with wire, and thus may have served as a toaster or parcher.

Possible evidence of one cooking procedure was observed in the fact that the small soldered closures in the tops of several vegetable cans found in the trash midden had been melted off and several such closure pieces were found in the fill of the room. This may

indicate that the can contents were heated through placing the cans directly upon coals or a grate in the fireplace.

Although it is entirely possible that the majority of cooking and serving utensils employed at the site may have been manufactured from metal, the lack of any ceramic or glass utensils of this sort may indicate transient rather than permanent habitation. The only glass items recovered were several fragments of an amber liquor bottle.

A considerable portion of the historic artifact complement from the site consisted of clothing parts such as metal boot lace eyelets, a portion of a lace-type boot upper, a leather shoe or boot sole, and metal rivets, buttons, and a suspender buckle from denim type bib overalls, and a single discarded pair of pants.

Thus it can be suggested that the facilities and artifactual remains comprising LA 12449 represent a periodically reoccupied herding encampment rather than a permanent habitation site. Although a number of food containers were recovered there is little evidence to suggest that procurement and consumption of foodstuffs other than canned goods comprised a substantial part of the subsistence of the site inhabitants. Evidence of the possible utilization of two different firearms was encountered, but no faunal remains other than domesticated species were found. Long term bulk storage of food resources is not indicated, and practically nothing exists to indicate other than extremely expedient preparation of canned goods for consumption was undertaken at the site location.

Given these indications, the volume of canned food resources consumed at the site location is not great, nor is the volume of domesticated faunal consumed. It seems very possible from these considerations that the occupation of LA 12449 was both limited and periodic in nature.

LA 12454

During survey LA 12454 was described as a two provenience site location. Provenience 1 consisted of two contiguous Anasazi P-IV structures, a semisubterranean rectangular structure (Room 1) and an abutting rectangular surface structure (Room 2). Provenience 2 was a surficial lithic and ceramic scatter located about 25 meters west of Provenience 1. Only the first provenience was excavated.

LA 12454 was located on the east side of White Rock Canyon across the Rio Grande from the mouth of Medio Canyon. The site was situated on a flat bench. An arroyo lay to the south of the structures with a basalt outcrop to the east. LA 12454 was located in the Upper Sonoran Juniper vegetative community at an elevation of 5290 ft. Juniper, cholla and prickly pear cactus were dominant species in the vicinity of the site.

A 2m x 2m grid system was superimposed over the site. This system extended 28 meters north-south and 20 meters east-west and encompassed 560 square meters. Each grid unit was stripped to a depth between 5cm and 10cm. Additonal subsurface tests were made in four grid units. The masonry structures were excavated in natural stratigraphic units.

Architecture

Orientation of Structure: The long axis of the roomblock was true north. The structure had a southwest exposure.

Dimensions of Roomblock: 6.14m x 4.66m (28.61 square meters).

Description of Rooms: Room 1 was located north of and contiguous to Room 2.

Shape: Rectangular, semi-subterranean structure.

Orientation: The long axis of the room was true north.

Condition: The structure had not been vandalized. A juniper grew in the northwest corner of Room 1.

Interior Room Dimensions:

	Length	Width	Height
North	2.20m	.37m	.96m
South	2.20m	.46m	.37m
East	1.90m	.32m	1.02m
West	1.90m	.53m	1.10m

Walls: All four walls of Room 1 were similar in construction and will be described together below.

Type of Elements: Local basalt clasts and slabs.

Size of Elements: Basal elements ranged in size from 30cm x 25cm to 39cm x 19cm. The middle slabs were smaller (range: 27cm x 7cm to 41cm x 4cm). Upper wall elements range was 24cm x 21cm to 56cm x 24cm.

Placement and Construction of Elements: The foundation elements were large and laid vertically. Upper elements were smaller and horizontally laid. Elements were laid in adobe mortar.

Shaping of Elements: Unmodified.

Wall Facing: Elements were placed such that the flat surfaces faced the interior of the walls.

Courses: Elements were overlapping and a single element wide.

Chinking: No chinking was present.

Corners: The northwest and southwest corners were rounded and interlocking. The foundation stones of the northeast and southeast corners were abutting, whereas the upper wall elements interlocked at the corners.

Plaster: No plaster was evident.

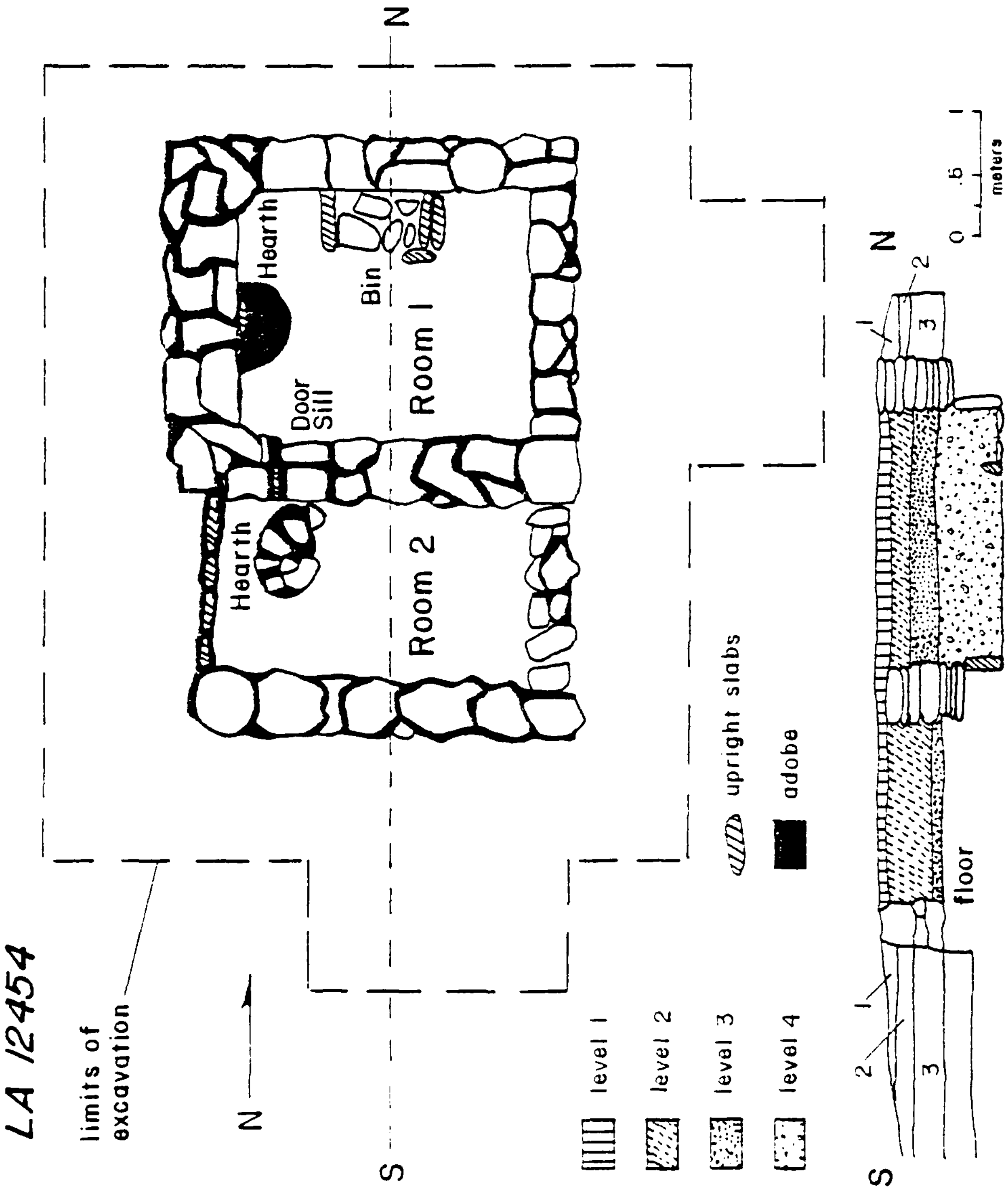

FIG. 9.31 LA 12454—Rooms 1 and 2, plan view and cross section

Entrances: No exterior doors were found. A doorway was located between Room 1 and 2, in the south wall of Room 1. The west face of this opening consisted of a single vertically placed basalt clast. The east side of the entrance was constructed through even alignment of wall elements. Two horizontally laid, large, basalt slabs formed the door wall. The opening was 40cm wide, and was raised 47cm off the floor of Room 1.

Floors: The floor was level and characterized as a hard-packed caliche and sand. It was 47cm below the floor in Room 2.

Roofing: No evidence of roofing materials was recovered.

Interior Features:

Hearth: A hearth measuring 66cm long by 32cm wide was built against the west wall, 51cm from the south wall. Three basalt upright slabs (14cm x 15cm; 23cm x 18cm; 16cm x 11cm) were set vertically against the west wall. No slabs enclosed the hearth. A thick lens of charcoal (66cm x 32cm) lay in front of the upright slabs. The fill contained chunks of charcoal, pockets of ash, adobe and a very light textured sand. One burned sherd was also found.

Bin: A rectangular slab-lined bin was constructed on top of the floor, against the north wall about 50cm from the northwest corner. The west side of the bin was constructed from a single vertically set basalt slab and the east side was constructed from two parallel, vertical slabs. Another vertical slab was placed perpendicular to the east side of the bin. Five flat slabs lay on the floor in the bin. The bin measured 65cm long by 45cm wide. A two-hand mano was recovered from the fill.

Room Fill: There were four distinct natural soil strata in the room fill. The top stratum (0-5cm) was a very fine wind-blown sand. This was followed by a hard-packed clay and caliche stratum (5cm to 25cm). The third stratum (25cm to 45cm) was a medium-grained sand with small pebbles scattered throughout. The fourth stratum (45cm to 100cm) was similar in composition to the second with clay and caliche. The floor was located in this fourth level. All cultural material, sherds, bone and lithics, were recovered from level 4.

Rubble: A total of 2.87 cubic meters of wall rubble was recovered from the fill within and without Rooms 1 and 2.

Exterior Fill: Fill adjacent to the exterior of all walls of Rooms 1 and 2 was removed, with the exception of a one meter long section along the west wall of Room 1. A large juniper was growing in this area which could not be removed without destroying the whole wall. The soil pits dug against the north and south walls indicated similar soil deposition. The top stratum of the exterior fill consisted of a medium brown sandy loam. This overlies a stratum composed of dark brown medium-grained sand. The third stratum was light brown in color and pebble ridden. No artifacts were found in the south test pit; a few lithics and sherds were found against the north wall. Squares G8 and F10 were excavated to a depth of 70cm. All others were excavated to wall foundation depth. The fill was homogeneous sand with small pebbles and no artifactual debris.

Exterior Features: No exterior features were found.

Room 2:

Shape: Rectangular surface structure.

Orientation: The long axis of the room was oriented true north.

Condition: The walls of Room 2 were badly eroded.

Interior Room Dimensions:

	Length	Width	Height
North	2.35m	.46m to .48m	.46m
South	2.50m	.33m to .47m	.41m to .56m
East	1.45m	–	.59m
West	1.30m	.50m to .10m	.41m to .49m

Walls: Due to their similarity in construction, the north and south walls will be described together. The east and west walls are described individually below.

West Wall:

Type of Elements: Local basalt slabs.

Size of Elements: The four wall elements ranged in length from 31cm to 51cm; in width from 29cm to 42cm; and in thickness from 5cm to 10cm.

Placement and Construction of Elements: The west wall elements were vertically laid with adobe mortar.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were evenly faced.

Courses: The west wall was one element wide.

Chinking: No chinking was present.

Corners: All corners were abutting.

Plaster: No plaster was noted.

South and North Walls:

Type of Elements: Local basalt boulders.

Size of Elements: Elements ranged in size from 67cm x 47cm x 6cm to 55cm x 33cm x 7cm.

Placement and Construction of Elements: Some elements in the north wall were horizontally laid while the majority were placed at varying angles. Elements in the south wall were horizontally laid with their long axes parallel to the long axis of the wall. All elements were laid in adobe mortar.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: The south wall was a single element wide and was not coursed.

Chinking: No chinking was evident.

Corners: The southeast corner was built on an outcrop of basalt. All corners abutted.

Plaster: No plaster was present.

East Wall:

Type of Elements: Local basalt clasts, slabs and boulders.

Size of Elements: Elements ranged in size from 28cm x 12cm x 9cm to 39cm x 20cm x 10cm.

Placement and Construction of Elements: Due to eroded condition, placement and construction could not be determined.

Shaping of Elements: Unmodified.

Wall Facing: Unknown.

Courses: Probably one element wide.

Chinking: No chinking was evident.

Corners: All corners abutted.

Plaster: Unknown.

Entrances: No exterior entrances were found. The interior doorway was described in the Room 1 section.

Floors: The floor was poorly defined. In some areas it was an easily discernable hard-packed clay layer. In patches it was powdery and irregular. The floor was 47cm above the floor found in Room 1 and was on the original ground surface.

Roofing: No evidence of roofing was found.

Interior Features:

Hearth: A hearth was located at floor level just south of the doorway to Room 1. It was characterized by a dark greasy stain. Seven basalt clasts were laid over this stain and several flakes and a core were found in the area. The clasts were fire blackened and the charcoal fill reached a depth of 21cm below the floor. It was ovoid in plan view (33cm x 64cm) and exhibited no discernable shape in cross section.

Room Fill: Room 2 was excavated in three natural strata: level 1, 0-5cm; level 2, 5cm-45cm; level 3, 45cm-floor. The room fill was similar to that in room 1. Cultural material was recovered from all levels and included lithics, sherds and ground stone.

Rubble: A total of 2.87 cubic meters of rubble was recovered from excavation inside and outside Rooms 1 and 2.

Exterior Fill: See description of Exterior Fill for Room 1.

Exterior Features: No exterior features were found.

Artifactual Assemlbages

Room 1, levels 1-3

Although three natural strata were defined for the upper 45cm of fill in Room 1, all artifactual materials collected from these strata have been collapsed into a single analytical sample.

Ceramic Artifacts

A total of five sherds was recovered from the upper fill in Room 1. A minimum of two different vessels were represented. One was an undifferentialed (Cieneguilla?) glaze polychrome olla with scoria temper. The other was a plain utility jar with rhyolite tuff temper.

Lithic Artifacts

No lithic artifacts were recovered.

Room 1, level 4

The fourth level defined in Room 1 was 55cm in depth and directly overlay the floor. Materials recovered from this stratum are discussed below. With the exception of a two-hand mano recovered from the bin, no artifacts were recorded in direct contact with the floor or floor features.

Ceramic Artifacts

Only two sherds were recovered from level 4. One represented a Blind Indented Corrugated jar and the other a plain utility jar. Both were tempered with locally available materials, vitrophyre and rhyolite tuff respectively.

Lithic Artifacts

A total of five lithic artifacts was recovered, all of which were manufactured from basalt. These included a two-hand mano found in the bin, two pieces of debitage, one piece of small angular debris and a core. The latter artifacts were all manufactured from a single taxon of basalt (3701) and none exhibited evidence of utilization.

Flotation Sample

A 1.0 liter sample of fill from the bin was floated with seven seeds recovered.

No.	Species	Comment
3	*Chenopodium*	This is an annual forb known as goosefoot or lambsquarters. It is thought to be quite succulent and tasty when young but considerably less so when in the mature, seed-producing stage. Seeds are a food source with high food value.
3	*Chenopodium* or *Amaranthus*	Characteristics of these two generally intergrade and damaged seeds are often indistinguishable. *Amaranthus* is anther weedy annual forb, similar to *Chenopodium* in growth habit, distribution and food use.
1	*Portulaca*	*Portulaca* (purslane or pursley) is a low-growing succulent plant. It is palatable to man and beast even when mature (in seed).

The presence of these weedy species seed in the proximity of a mealing bin may be the result of human use of these seed types. *Portulaca*, *Chenopodium*, and *Amaranthus* have frequently been recorded as being pro-

cessed for food by grinding. It should also be kept in mind that small rodents such as kangaroo rats (*Dipodmys* spp.) are fond of a wide variety of grass and weeds seeds, including such species as these. Since none of these seven seeds show signs of parching or burning, it cannot be assumed that their presence is due to human use.

Room 2, levels 1,2

Although two natural strata were defined for the upper 45cm of fill in Room 2, all artifactual materials recovered from these strata were treated as a single analytical sample.

Ceramic Artifacts

Nine sherds were recovered from the upper fill in Room 2. These represented the only ceramics recovered from the room. Eight sherds were from one undifferentiated glaze polychrome olla. This vessel was tempered with scoria. The second vessel, a plain utility jar with rhyolite tuff temper, was represented by a single sherd. These sherds may represent portions of the same vessels collected from the upper fill in Room 1.

Lithic Artifacts

A total of 18 pieces of debitage, three pieces of small angular debris and one core were recovered from the upper fill in Room 2. With the exception of one piece of debitage and one piece of small angular debris, all of the remaining lithic artifacts were manufactured from a single taxon of basalt (3701). A majority of the artifacts exhibited cortical surfaces but none had been utilized as tools.

Room 2, level 3

Level 3 represented the fill which directly overlay the floor.

Ceramic Artifacts

No ceramic artifacts were recovered from level 3.

Lithic Artifacts

Two pieces of debitage and one piece of small angular debris, both manufactured from a single taxon of basalt (3701), and a single two-hand mano fragment were recovered from level 3. Two edges from the piece of debitage exhibited wear patterns and the mano fragment had been pecked.

Exterior Grid Units

A 2m x 2m grid system was superimposed over LA 12454. Each of the units was surface stripped and screened. Additonal subsurface tests were made in grid units G8 and F10 to a depth of 60cm, and two small 1.0m x 0.5m trenches were placed in grids C4 and H6. These tests confirmed the surficial nature of the artifactual distribution. All of the materials recovered from the grids were combined into a single analytical sample although several high density artifactual concentrations occurred. These will be discussed below where appropriate.

Ceramic Artifacts

A total of 78 sherds, which represent 33% of the total ceramic assemblage at LA 12454, was recovered from 27 of the 140 grid units. Four high density concentrations of ceramics were documented. Two were situated adjacent to the rooms (one in grids E10, E11 and F10, and the other in grid G8). Another was located at the southwestern edge of the site, in grid A13. The fourth concentration represented a single broken vessel in grid B1, at the northwestern edge of the site.

A minimum of two different vessels were recovered. These included one Cieneguilla G/Y bowl, five different undifferentiated glaze-on-red vessels (4 ollas and 1 bowl), one undifferentiated glaze polychrome (Cieneguilla?) olla, one Blind Indented Corrugated jar, and one plain utility jar with a polished interior.

Eight of the vessels were tempered with basalt scoria from the Cerros del Rio or rhyolite tuff from the Pajarito Plateau. The remaining four vessels were tempered with materials available in the Galisteo Basin.

Lithic Artifacts

A total of 174 lithic artifacts was collected from 61 grid units at LA 12454. This represents a mean frequency of 0.7 artifacts per sq. meter for those grids exhibiting lithics and 0.3 artifacts per sq. meter for the grid system as a whole. A majority of the lithic artifacts were debitage (63.2%) and small angular debris (29.9%).

1. Material Selection

Twelve different material taxons were represented in the lithic assemblage collected from the exterior grids. The vast majority were basalt (83.9%, 2 taxons), followed by obsidian (6.9%, 4 taxons), chalcedony (5.9%, 3 taxons) and chert (3.4%, 3 taxons). Eighty-two percent of the lithics were manufactured from a single taxon of basalt (3701).

2. Manufacture

One material taxon of basalt (3701) was characterized by large frequencies of cortical and noncortical debitage and small angular debris, as well as two cores, which is suggestive that artifact reduction was undertaken within the provenience locale. The reduction technique employed for all materials appears to have been similar, involving the freehand detachment of debitage. Four resharpening flakes and two retouch flakes suggest the manufacture or usage of at least three facially retouched artifacts.

3. Tool Utilization

A chopper and two cores exhibiting nonbattering utilization were the only massive processing implements recovered from the exterior grid units. The distal end of a small obsidian biface and possible resharpening flakes from that artifact, another obsidian biface constituted the only evidence of facially retouched tools employed at the site.

A total of 20 peices of debitage or small angular debris exhibited 22 utlized edges. These artifacts were manufactured from basalt (11 artifacts, 12 edges), obsidian (4 artifacts, 4 edges), chalcedony (3 artifacts, 3 edges) and chert (2 artifacts, 3 edges). Edge outline shape variability was restricted predominately to straight and convex edges, although three concave edges, one

concave-convex edge and a single projection were present. Seven of the edges were characterized by unidirectional perpendicular step fractures indicative of scraping utilization, while the remainder exhibited nibbling, crescentic scars, rounding and occasionally polish indicative of sawing upon relatively nonresistant media. All utilized edges were unretouched and nonsinuous, and edge angles were generally acute. One edge of a chert artifact characterized by sawing utilization exhibited hematite stains (Ewing, personal communication).

3. **Bone Artifacts**

No bone artifacts were recovered from the exterior grids at LA 12454.

4. **Historic Artifacts**

A single dried leather fragment was recovered from level 2 in grid F10.

5. **Fauna**

Three pieces of bone were recovered from grid D6. Two skull fragments indicate the presence of one Artiodactyla. A small mammalian vertebra fragment may also belong to the Artiodactyl individual.

TABLE 9.50

LA 12454—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	SCORIA	BASALT	RHYOLITE	VITROPHYRE	HORNBLENDE LATITE	AUGITE LATITE	TOTAL
Room 1, levels 1-3								
Cieneguilla G-P(?)	olla	3	–	–	–	–	–	3
Plain Utility	jar	2	–	–	–	–	–	2
Room 1, level 4								
Blind Indented Corrugated	jar	–	–	–	1	–	–	1
Plain Utility	jar	–	–	1	–	–	–	1
Room 2, levels 1-2								
Cieneguilla G-P(?)	olla	8	–	–	–	–	–	8
Exterior Grids								
Cieneguilla G/Y	bowl	38	–	–	–	–	–	38
Cieneguilla G-P(?)	olla	9	–	–	–	–	–	9
Agua Fria (?) G/R	olla	1	–	–	–	–	–	1
Unidentified G/R	bowl	–	–	–	–	2	1	3
Unidentified G/R	olla	4	3	–	–	1	1	9
Unidentified G-P with G/Y body sherds	olla	5	–	–	–	–	–	5
Plain Utility	jar	–	–	11	–	–	–	11
Utility (polished interior)	jar	–	–	2	–	–	–	2

TABLE 9.51

LA 12454—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, LEVEL 4													
Basalt:	3701	2	1	–	1	–	–	–	–	–	–	–	4
	3430	–	–	–	–	–	–	–	–	1	–	–	1
Room Totals:		2	1	0	1	0	0	0	0	1	0	0	5
ROOM 2, LEVELS 1,2													
Basalt:	3701	15	3	–	1	–	–	–	–	–	–	–	19
	3050	–	–	1	–	–	–	–	–	–	–	–	1
Chalcedony:	1215	1	–	–	–	–	–	–	–	–	–	–	1
	1340	–	1	–	–	–	–	–	–	–	–	–	1
Room Totals:		16	4	1	1	0	0	0	0	0	0	0	22
ROOM 2, LEVEL 3													
Basalt:	3701	2	1	–	–	–	–	–	–	–	–	–	3
	3430	–	–	–	–	–	–	–	–	1	–	–	1
Room Totals:		2	1	0	0	0	0	0	0	1	0	0	4
EXTERIOR GRIDS													
Obsidian:	3524	–	1	1	1	–	–	–	–	–	–	–	3
	3521	1	–	–	–	–	–	–	–	–	–	–	1
	3525	2	2	2	–	–	–	–	1	–	–	–	7
	3530	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	92	44	3	2	–	1	–	–	–	–	–	142
	3050	3	1	–	–	–	–	–	–	–	–	–	4
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	2	–	–	–	–	–	–	–	–	–	–	2
	1090	2	1	–	–	–	–	–	–	–	–	–	3
Chalcedony:	1053	2	1	–	–	–	1	–	–	–	–	–	4
	1212	1	–	–	–	–	–	–	–	–	–	–	1
	1215	3	2	–	–	–	–	–	–	–	–	–	5
Grid Totals:		110	52	6	3	0	2	0	1	0	0	0	174

SUMMARY

LA 12454 is an early P-IV phase Anasazi Period site consisting of two contiguous room structures and an exterior distribution of artifactual remains. Architectural construction at LA 12454 is typical of many other P-IV phase sites documented within Cochiti Reservoir. One of the rooms (Room 1) which was semisubterranean, contained a hearth and a bin and encompassed 4.2 sq. meters of floor space. The second room (Room 2) was built on the existing ground surface contiguously to Room 1 and contained another hearth. It encompassed 3.3 sq. meters of floor space. The two rooms were connected by a doorway situated midway along their common wall.

Direct evidence of food resources possibly procured and consumed at the site location was restricted to a few seeds from three species of plants (*Chenopodium*, *Amaranthus*? and *Portulaca*) recovered from the bin in Room 1, and a few skeletal fragments from an Artiodactyla individual found in grid units outside the rooms. Indirect evidence of food processing and consumption include milling implements found in both rooms, the two interior hearth facilities and a ceramic vessel assemblage from the site as a whole which included a range of cooking, serving and storage vessels.

With the exception of single fragments from two different jars found on the floor of Room 1, sherds from a minimum of 14 vessels were recovered outside the room

structures or in the upper fill of the rooms. This paucity of artifactual remains from room floor contexts is reflected in the distribution of lithic artifacts was well in that only eight lithics were recovered from both floors.

The degree to which these distributions reflect performance of most activities outside the rooms, or systematic cleaning of room interiors is subject to question. It can be suggested, however, that milling and cooking activities were pursued within the room structures, given the lack of exterior hearths or milling implements.

Tool manufacturing activities were undertaken with respect to a single taxon of basalt (3701) and although 12 other taxons of material are represented in the entire site assemblage, none were characterized by more than six pieces of debitage or small angular debris. Task specific usage of tools seems to have been restricted rather than diverse in nature. Little variability in edge outline shape, edge angle or sinuousity was in evidence, and the majority of edges were employed for sawing or slicing relatively nonresistant materials. Scraping usage was apparent for several edges as well, but the fact that few of these edges were steep in edge angle indicates their use upon nonresistant media as well.

Architectural and artifactual data thus indicate that LA 12454 served as a locus for habitation in that substantial evidence for some kinds of food processing and consumption was recovered. Although tool manufacture was undertaken at the site location, manufacturing activities focused upon reduction of a single taxon of locally available basalt. Implement edge morphology and wear pattern variability indicate that a rather narrow set of task specific activities were pursued through use of tools. Architectural construction at the site encompassed floor space adequate for bulk storage of food resources, but the presence of hearth facilities in each room, and ancillary evidence that milling activities were undertaken in each room, may suggest that neither structure was employed for such storage.

The degree to which the site location may represent a year round habitation base is thus questionable, despite the substantial investment into architectural construction indicated.

The ceramic assemblage, like assemblages recovered from other P-IV phase site locations, indicates some degree of articulation of the local inhabitants with an interregional trade network which involved at least circulation of ceramic vessels. Two of the four bowls and two of the six ollas recovered from the site were manufactured from tempering materials available at two different locations within the Galisteo Basin. The remaining vessels, including all four corrugated jars, were manufactured with tempers available within the study area.

LA 12456

Location and Physiographic Situation

LA 12456 is nonstructural site location dating to the late Archaic period which is characterized by hearth facilities, firecracked rock scatters, lithic artifacts and a few ceramic fragments. The site is located on the east side of the Rio Grande River in White Rock Canyon, opposite and some 145 meters upstream from the mouth of Sanchez Canyon, at an elevation of 5290 ft.

LA 12456 is situated in the southern portion of an area of sand dunes which overlie an extensive basalt landslide rubble formation which protrudes into the Rio Grande River from the east, and has created a small rapids in the river itself directly downstream from the site location. The site area is thus located some 10 meters in vertical elevation above the river, and 20 meters from the river's edge. Land areas in the vicinity of the site location drain directly into the Rio Grande River.

The site is located in the Upper Sonoran Juniper vegetative community, and the vegetative structure characterizing the vicinity of the site location is an open juniper woodland. Dominant species include juniper, rabbitbrush, sand sage, cholla cactus, prickly pear cactus and star cactus.

Methodology of Excavation

The dune structure upon which LA 12456 is located forms a saddle bounded on the east and west by steeply sloping sides of adjacent sand dunes, and the artifactual remains comprising the site location are distributed predominantly in linear fashion along the bottom of the saddle and the lower portion of the eastern dune slope. The site was documented during survey as exhibiting four general localities characterized by evidence of hearth facilities and artifactual debris, and the first stage of excavation involved superimposing a 1.0m x 1.0m grid system over the entire site area visible from the surface. The grid was oriented with its long axis more or less parallel to the side of the eastern dune slope, or ca. 10 degrees west of true north, and ultimately extended 38m north-south and between 8m and 16m east-west.

Excavation proceeded initially through documenting variability in surficial materials through mapping, artifact collection and weighing possible hearth elements and firecracked rock within each 1.0m x 1.0m grid unit. Subsurface excavations were undertaken in several places to determine the nature of deposition and post-deposition erosion of the site area, and to ascertain the presence and constructional detail of possible features such as hearths or firecracked rock concentrations. It was determined through these excavations that the entire site area was extremely deflated, presumably due to wind activity, and that artifactual remains and evidence of hearth construction and utilization was generally restricted to the uppermost five centimeters of the site surface.

Site Description

LA 12456 was described during survey as exhibiting four provenience locales, each characterized by a possible hearth facility and an associated scatter of lithic artifacts and firecracked rock. Post-excavation analysis

of the spatial distribution of hearth features, firecracked rock and lithic artifact densities resulted in definition of eight provenience locales, five of which exhibited evidence of hearth construction and utilization. The site location was apparently inhabited during the late Archaic Period, and although 13 ceramic fragments dating in manufacture to the Anasazi Period were recovered, no physical evidence exists to suggest that they were deposited as by-products of hearth utilization within the site location.

PROVENIENCE 1

Features

One definite hearth area of recent usage was documented during excavation of Provenience 1. This hearth area was situated at the extreme eastern edge of the provenience locale, and was comprised of a largely surficial concentration of charcoal chunks. The hearth measured 1.25m in diameter, and was centered upon the intersection of grid units G55, G56, H55 and H66. No artifacts of modern manufacture were found in the vicinity of the hearth, and it was not lined or encircled by rock elements.

Evidence of a possible prehistoric slab-lined hearth feature was documented as a distribution of basalt slabs near the center of the provenience, but the feature was not intact, and its original dimensions and construction could not be ascertained. The majority of slabs were distributed over an area measuring 6m by 7m in extent, and occurred in highest density within grid units K53-54 and L52-53. An east-west test trench 1.0m wide and 7m long was excavated through a portion of this distribution (grid units J55-P55), and the distribution of both slabs and artifactual remains was found to be restricted to the upper 5cm of the site surface. This trench was excavated into a portion of the steep sand dune slope bordering the provenience on its eastern side, and no artifactual remains were encountered beneath the dune.

Post excavation analysis of basalt slab weights recovered from the entire provenience locale demonstrated that the highest density of slabs were distributed from grid units K53-54 and L52-53 eastward to grid unit N53. Occasional slabs were distributed throughout intervening grid units M56, N57, P56 and M60. Subsurface excavation in the vicinity of the slabs yielded a relatively high volume of firecracked basalt and quartzite cobbles within grid unit L53, and occasional small pieces of firecracked basalt throughout the slab distribution, as well as occasional areas of charcoal stained sand and charcoal flecks. With the exception of charcoal stain, however, all such evidence of hearth usage was restricted to within 5cm of the site surface.

It is possible that this distribution of slabs may represent an eroded or deflated feature such as the one found partially intact in Provenience 2. The total weight of slabs recovered from Provenience 1 was 284 kg, or slightly more than twice the weight of slabs comprising the feature in Provenience 2. This may indicate that two such features of similar size or one larger feature of similar construction may have once been present within Provenience 1. The slab lined feature in Provenience 2 was situated only three meters south of the slab distribution within Provenience 1.

Artifactual Assemblages

Ceramic Artifacts

A single Blind Indented utility ware jar fragment was recovered from grid unit O55.

Lithic Artifacts

A total of 190 lithic artifacts was recovered from 69 of the 97 grid units comprising Provenience 1, for a density of 2.75 artifacts per square meter within grid units encompassing artifacts, and 1.96 per square meter for the provenience overall.

Lithic artifactual remains, as monitored by weight of debitage and small angular debris, were distributed in greatest density over an area directly north and west of the slab concentration. The highest density of lithic artifacts was recovered from grid unit L56, but an area measuring between 2-3m wide and 5m long characterized by very high densities of lithic artifacts extended from grid units L55 and L56 westward to grid units H54 and H55. High densities of lithic artifacts were recovered as well from three contiguous grid units to the southwest of this concentration, and from a single grid unit in the south central portion of the slab distribution.

Although four of the 22 larger lithic artifacts such as cores, large angular debris and choppers were recovered from grid units encompassing highest densities of debitage and small angular debris, the majority of these were found essentially around the fringes of the basalt slab distribution. It is interesting to note that an area measuring some 3m north-south by 5m east-west situated directly north of the large debitage and small angular debris concentration, and directly northwest of the major distribution of basalt slabs, is largely devoid of artifactual remains of any kind.

1. Material Selection

Of the 190 lithic artifacts recovered from Provenience 1, the majority were manufactured from basalts (79%, 4 taxons), followed by chalcedonies (16%, 4 taxons), and obsidian (4%, 6 taxons). Four artifacts from two taxons of chert, six artifacts of quartzite and one of greenstone comprised the remainder of the assemblage. With the exception of a single piece of type 3510 obsidian, all materials are locally available within the study area. Nearly 74% of the basalt cortex was waterworn, indicating the possible selection of basaltic raw materials from a modern beach along the Rio Grande River directly upstream of the site location.

2. Manufacture

Only three taxons of basalt and one of chalcedony were found in enough frequency to suggest that their reduction may have been undertaken within the provenience locale. Manufacture of basalt artifacts is well in evidence as eight cores and two pieces of large angular debris. A quartzite core and a piece of quartzitic large angular debris were found, as was a single hammerstone.

Fifty percent of the chalcedony artifacts exhibited cortical surfaces, as did 45% of the basalt artifacts. Nearly 43% of the basalt platforms were cortical, and 65% of those pieces of basalt debitage with cortical platforms had no cortex upon their dorsal surfaces, which might indicate they were manufactured from tabular raw materials. Over three-fourths of the chalcedony platforms were noncortical, however, which suggests that the raw

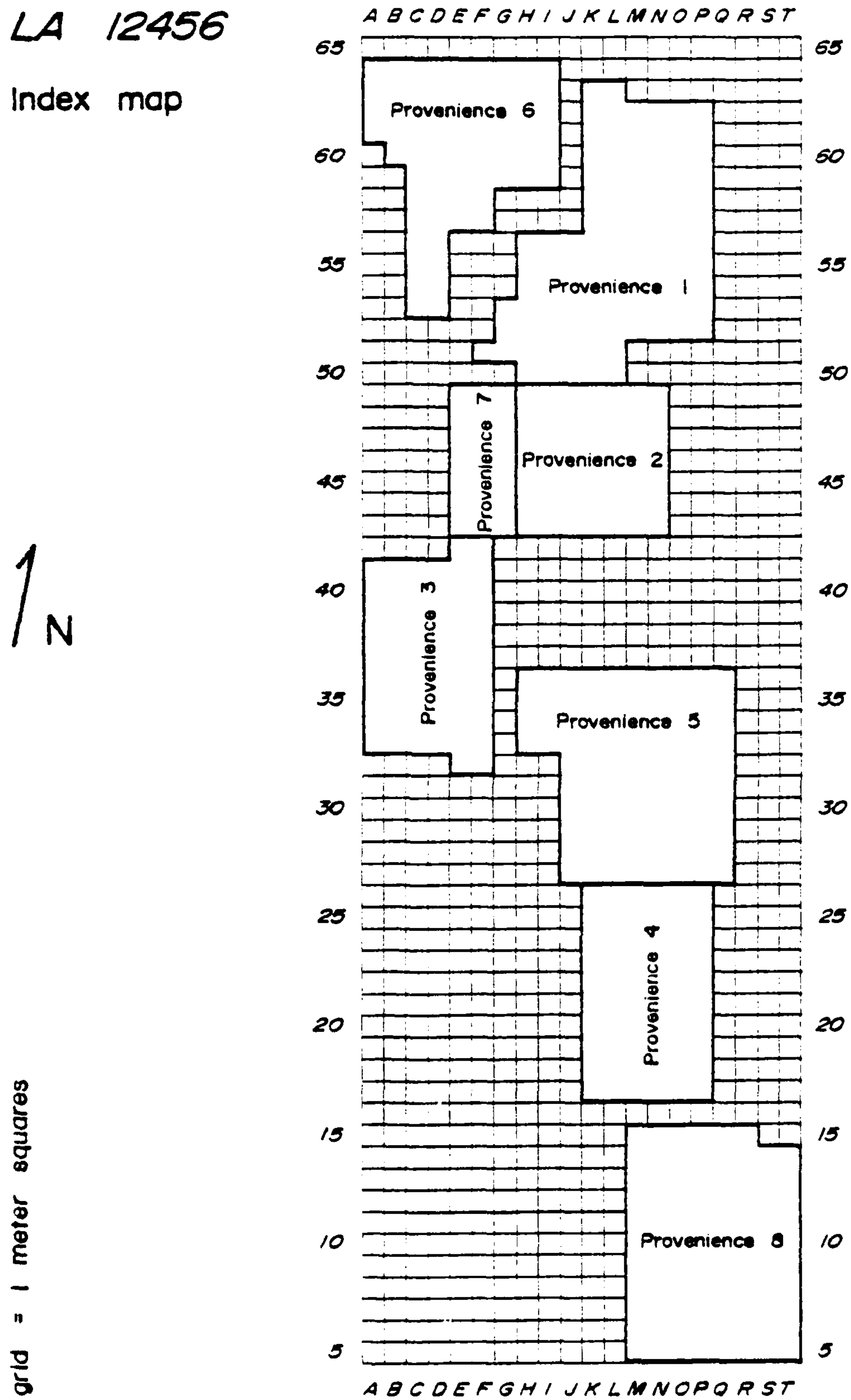

FIG. 9.32 LA 12456—Index Map

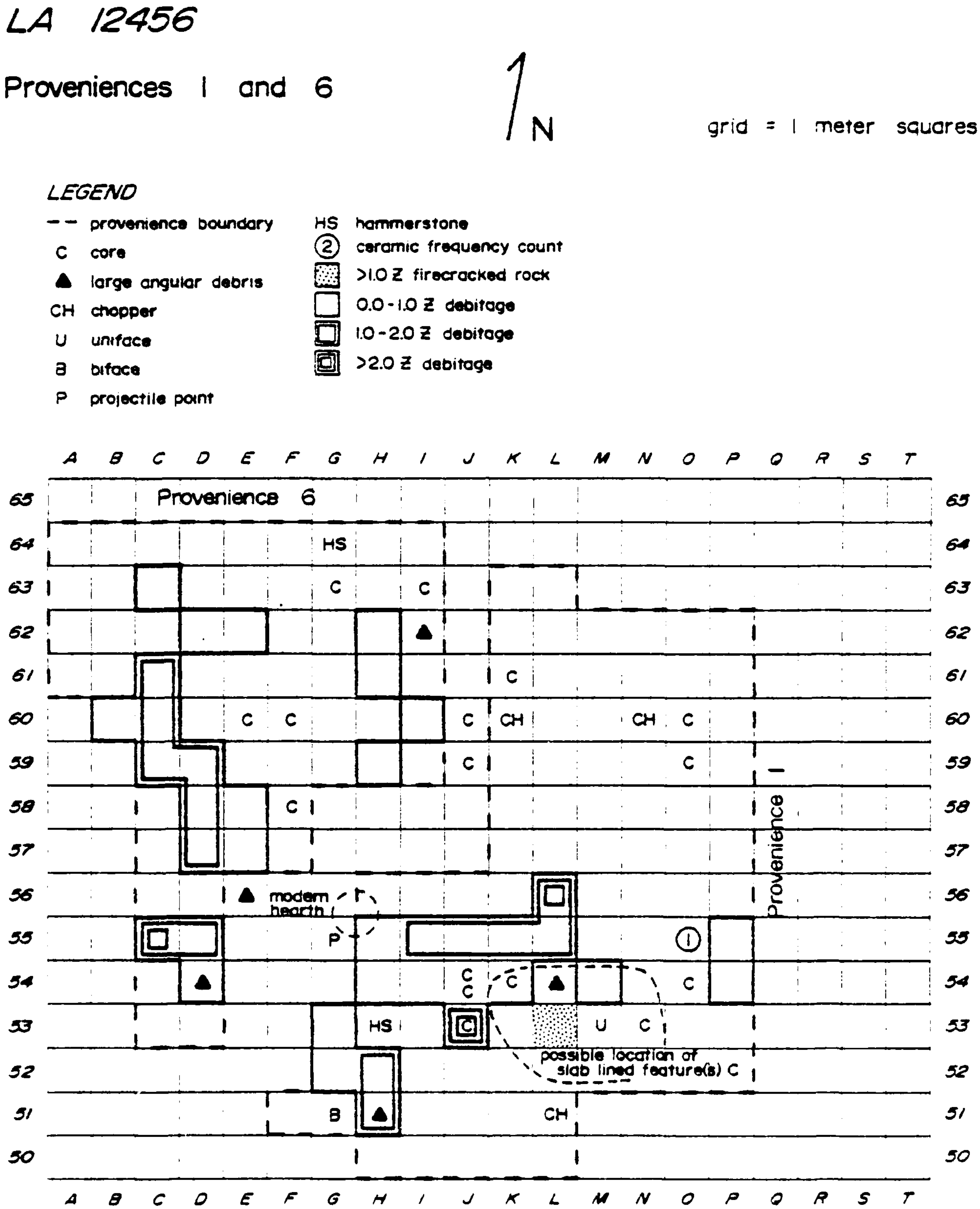

FIG. 9.33 LA 12456—Proveniences 1 and 6

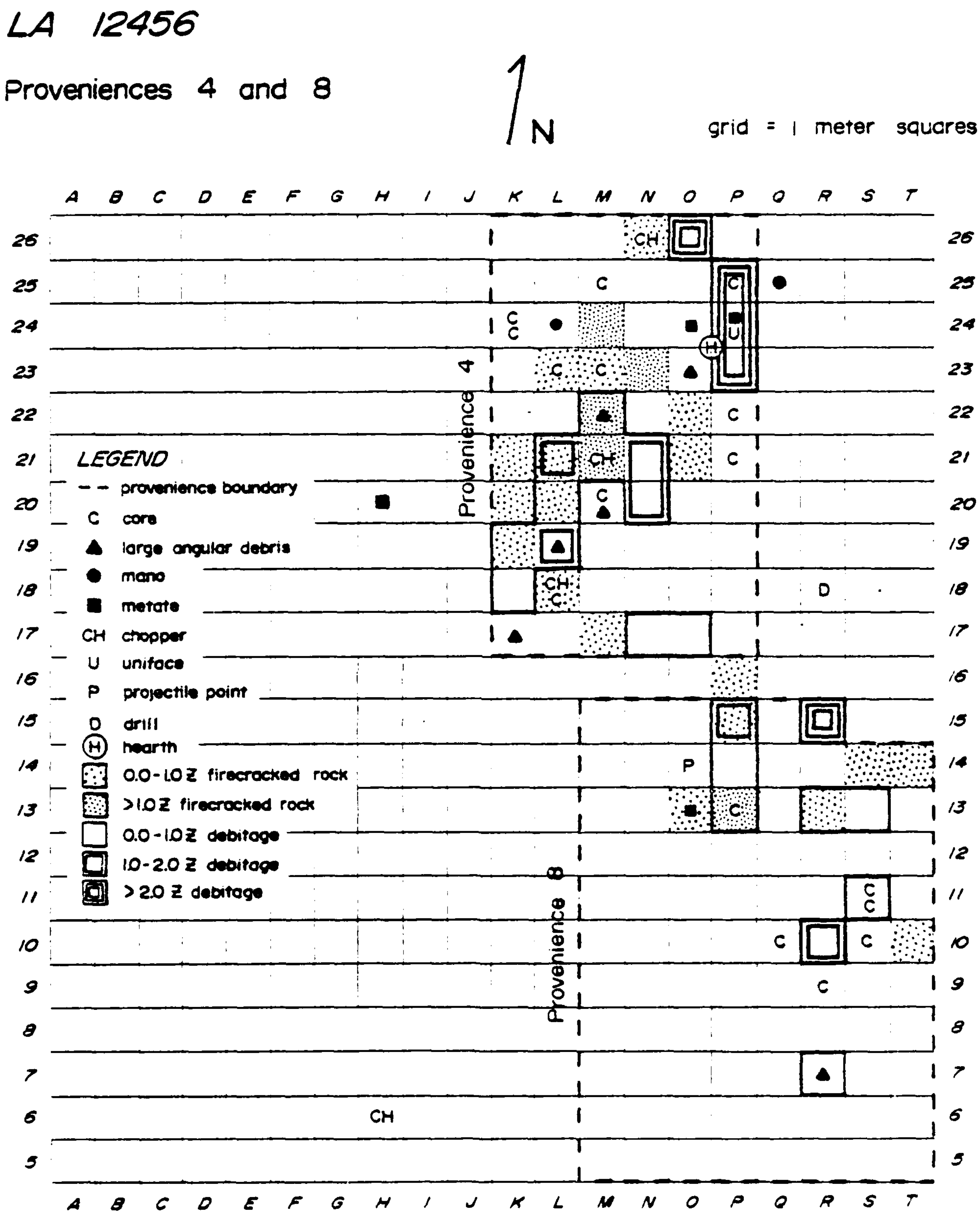

FIG. 9.34 LA 12456—Proveniences 4 and 8

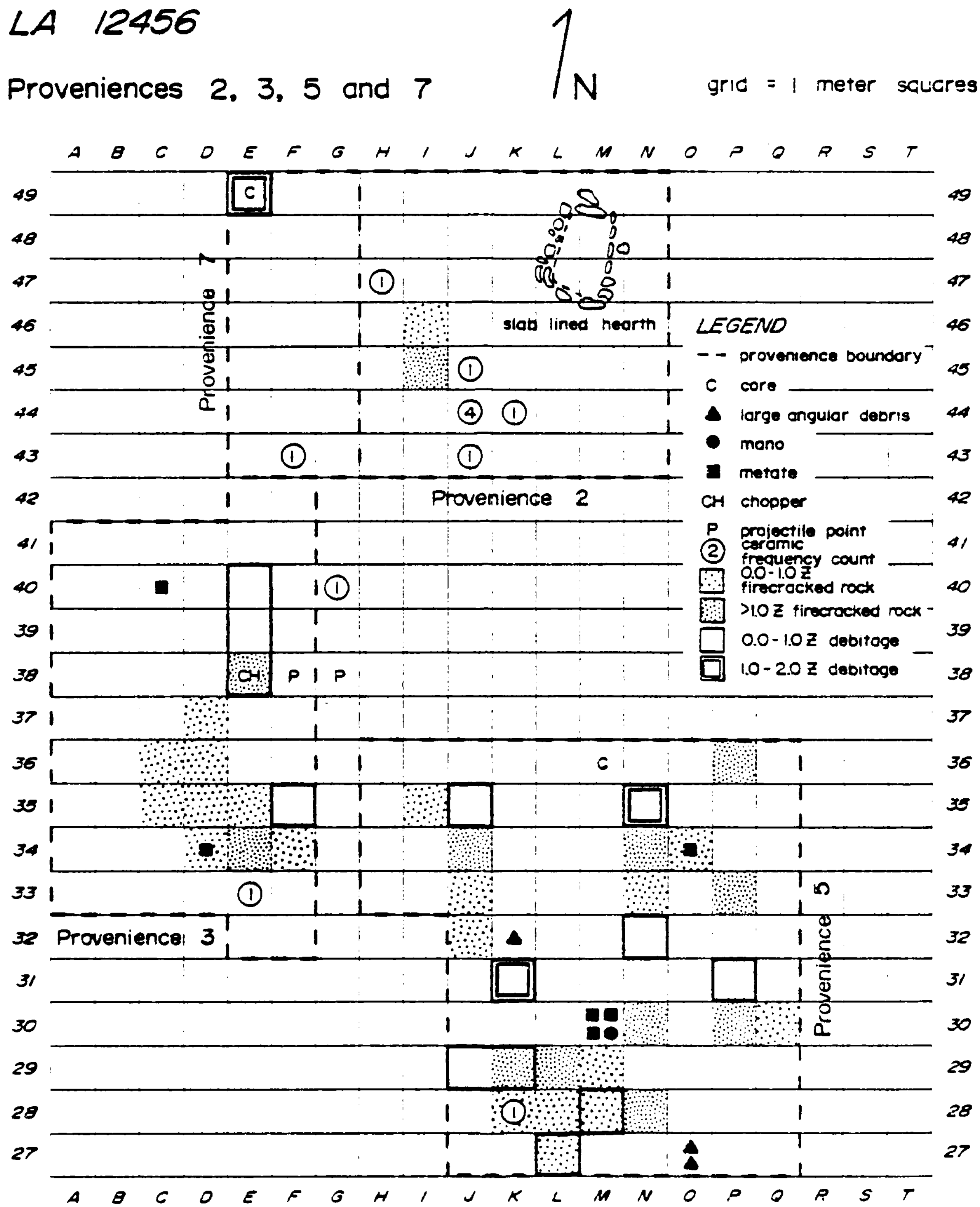

FIG. 9.35 LA 12456—Proveniences 2, 3, 5 and 7

materials were nodular in form, necessitating preparation of a striking platform for further debitage reduction.

3. **Tool Utilization**

No milling implements were recovered within the provenience locale, but a hammerstone and three pieces of large angular debris which had been used in a fashion resulting in wear patterns other than battering were found. None of the cores within the provenience were utilized as tools. A midsection of a corner notched projectile point manufactured from 1091 chalcedony was found in grid unit G51 near the extreme western periphery of the provenience, and a whole corner notched point manufactured from 1052 chalcedony was recovered from grid unit G55, directly adjacent to the western periphery of the provenience. No retouch or resharpening flakes from either of these materials were found within the provenience. Single retouch flakes of 3424 and 3425 obsidian respectively, were recovered, as were two resharpening flakes and a single retouch flake of 3701 basalt. The two obsidian retouch flakes represented the only occurrences of those materials within the provenience and thus may have been detached from two different obsidian bifacial tools in resharpening contexts. In a similar sense, the basalt retouch and resharpening flakes apparently represent usage of at least one basalt biface within the provenience locale.

A single unifacially retouched chalcedony artifact which had been used as a scraper was recovered from the vicinity of the basalt slab concentration as well.

Sixteen pieces of debitage or small angular debris exhibited a total of 23 utilized edges. Nine of these tools were manufactured from basalt (13 edges), six from chalcedony (8 edges) and one from chert (2 edges). An additional basalt artifact exhibited two edges unidirectionally retouched to a straight outline shape with no evidence of wear.

Three of the utilized edges were unretouched, concave, and exhibited evidence of scraping usage. Nine of the remaining edges were straight, nine were convex (two of which were bidirectionally retouched), and two were concave-convex in outline shape. Of these 20 edges, 17 exhibited evidence of sawing utilization upon relatively resistant materials in the form of both bidirectional and unidirectional step fracture in conjunction with nibbling, crescentic scars or rounding. Four of these tools were backed. The remaining three edges exhibited evidence of unidirectional scraping alone.

PROVENIENCE 2

Provenience 2, as analytically defined, is situated directly south of Provenience 1, and directly east of Provenience 7.

Features

A partially intact slab lined hearth was situated in the northeastern portion of the provenience. The feature was rectangular in shape, and its interior dimensions measured 210cm north-south by 60cm east-west. The feature was originally constructed of basalt slabs which had been set vertically, without adobe mortar, into sand. The several slabs comprising the eastern side of the feature and a single slab comprising the northern end were still in place vertically, while those which had originally comprised the western and southern ends of the feature had fallen outward. Given the height of those slabs still in place, and the dimensions of slabs which had fallen outward from the interior of the feature, it was ascertained that the original height (or depth) of the hearth was 20cm to 25cm.

The total weight of slabs comprising the feature was 127 kg.

No evidence of a constructed floor or base to the feature was encountered. The interior sand fill was characterized by a distinct charcoal stain, and occasional flecks of charcoal which extended to the base of those slabs still in place. Many of the slabs exhibited evidence of heat spalling, and several spalls were recovered from the fill.

It was difficult to determine if the feature had originally been surficial or subsurface in construction, but given that the majority of slabs lining the hearth have fallen, it can be suggested that the feature was originally constructed as a slab lined pit which has since deflated through wind action.

With the exception of occasional small spalls presumably deriving from the slab elements lining the hearth, no firecracked rock was recovered within or adjacent to the feature. A small pile of firecracked rock was situated three meters southwest of the heart in grid units I45-46. This concentration may represent a discard pile of heat retaining elements used in conjunction with the hearth itself, but if so, the use of such heat retainers was very minimal.

A single macroscopic fragment of shell from a terrestrial gastropod was recovered from within the vicinity of the hearth (grid unit L48). Although no other macroscopic floral or faunal remains were encountered within or nearby the hearth, preliminary flotation analysis of fill within the hearth revealed a substantial number of microscopic bone fragments, four shell fragments and a single seed fragment. These fragments could not be identified as to species or genera, but the bone fragments appear to be shaft portions of long bones from large, rather than small, mammals. No cancellous tissue was noted, and both burned (43 pieces) and unburned (22 pieces) fragments were represented in the small volume of fill analyzed.

Artifactual Assemblages

Ceramic Artifacts

A total of 8 fragments of possibly the same Cieneguilla G-P bowl was recovered from five different grid units within the provenience. Six of these sherds were rhyolite tuff tempered Cieneguilla G-P, while the remaining two were Cieneguilla G/Y with the same temper. All may be fragments of the same vessel, pieces of which are distributed over an area some 8m in diameter to the southwest of the hearth feature in Provenience 2. Whether this vessel represents an item used in conjunction with utilization of the hearth itself is difficult to ascertain. No ceramic fragments were found within the hearth, however.

Lithic Artifacts

A total of 19 lithic artifacts was recovered from 13 of the 49 grid units comprising the provenience locale, resulting in a density of 1.46 artifacts per square

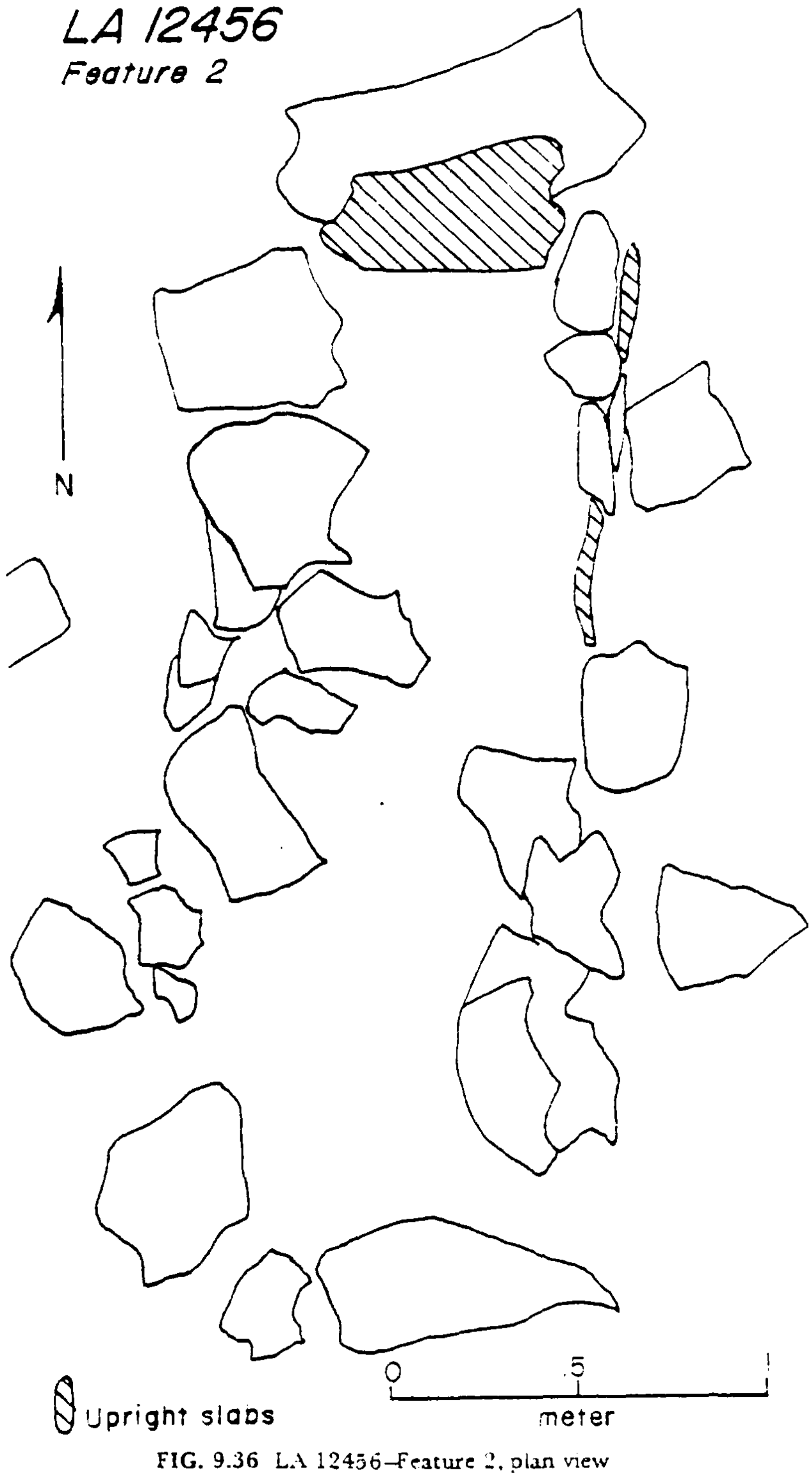

FIG. 9.36 LA 12456—Feature 2, plan view

meter within those grid units exhibiting artifacts, and 0.39 artifacts per square meter for the provenience as a whole. Eight of the artifacts were pieces of debitage, and six were pieces of small angular debris. The distribution of artifacts was quite dispersed, with no concentrations evident.

1. Material Selection

Of the 19 artifacts recovered from Provenience 2, 37% (2 taxons) were manfuactured from basalt, followed by obsidian (47%, 3 taxons), and chalcedony (13%, 2 taxons). All of the materials represented are

available within the study area.

2. **Manufacture**

There is no substantial evidence that artifact manufacture was undertaken within the provenience locale. No cores, large angular debris or hammerstones were recovered, and no more than five pieces of debitage or small angular debris were represented by any single material taxon.

3. **Tool Utilization**

No milling implements, massive processing tools or hammerstones were recovered within the provenience. A single proximal fragment of a side notched projectile point manufactured from 3523 obsidian was found in grid unit J42 adjacent to the southern boundary of the provenience locale, and two retouch flakes from the same material type were recovered within the provenience. The only other evidence of tool utilization was recovered as a single piece of obsidian debitage exhibiting one unretouched straight edge characterized by wear patterns indicative of either bidirectional scraping or sawing usage.

PROVENIENCE 3

Features

No intact or partially intact features were encountered within the provenience locale, although evidence of hearth utilization was recovered as a relatively low density concentration of firecracked quartzite and basalt. A few basalt slabs were recovered from grid units B37, D39 and E39, and may represent remnants of a deflated hearth feature. Firecracked rock was distributed over an area measuring some 3m by 5m in the southeastern portion of the provenience, but no high density epicenter could be defined for the distribution.

Artifactual Assemblages

Ceramic Artifacts

One fragment of a Kotyiti Glaze-on-Buff jar was recovered from grid unit E33, and represents the only evidence of that vessel within the site location. A Cieneguilla G/Y bowl fragment was recovered from grid unit G40 near the northeastern perimeter of the provenience, and represents part of the same vessel fragmented within Proveniences 2 and 7 to the north and east.

Lithic Artifacts

A total of 49 lithic artifacts was recovered from 20 of the 58 grid units comprising the provenience, thus exhibiting a density of 2.45 artifacts per square meter for those grid units containing artifacts, and 0.84 artifacts per square meter for the provenience overall. The highest densities of debitage and small angular debris, as monitored by weight, were encompassed by grid units E38, E39, E40 and F35. Densities of lithic debitage for the provenience locale were relatively low overall, however. The majority of artifacts were debitage (51%) and small angular debris (35%).

1. **Material Selection**

Forty-seven percent of the lithic artifacts were manufactured from two taxons of basalt, followed by obsidian (25%, 5 taxons), and chalcedony (18%, 3 taxons). The remaining five artifacts were manufactured from two taxons of chert, one taxon of granite and one of silicified wood. All materials represented are available within the study area.

2. **Manufacture**

No cores, large angular debris or hammerstones were recovered from the provenience. A single taxon of basalt (3701) was represented by frequencies of debitage and small angular debris substantial enough to indicate limited manufacturing activities within the provenience locale itself.

3. **Tool Utilization**

Milling activities are represented by two metate fragments, and a single basalt chopper was recovered. The proximal fragment of a small corner notched obsidian projectile point was found in grid unit F38, and a whole projectile point of similar shape, size and material (3530) was recovered from grid unit G38. Two retouch flakes and a single resharpening flake of 3523 and 3524 obsidians indicate either manufacture or utilization of two additional obsidian bifaces.

Three other tools are represented by pieces of debitage exhibiting a total of six unretouched edges. One obsidian tool exhibited four utilized edges, while the basalt and silicified wood tools exhibited one utilized edge each. Of the six edges, four were concave in outline shape, one was convex, and one was concave-convex. With one exception, all edges exhibited wear patterns indicative of scraping utilization.

PROVENIENCE 4

Features

Provenience 4, as defined analytically, is situated directly south of Provenience 5 and directly north of Provenience 8. No well preserved features were encountered during excavation, but evidence of a single eroded hearth structure and an associated distribution of firecracked rock was recovered.

The hearth was situated at the intersection of grid units O23, O24, P23 and P24, and was represented by a dense concentration of basalt slabs and clasts over an area some 2m to 3m in diameter. The base of the hearth was apparently slab lined and was situated 10cm below the present ground surface. A lens of burned sand and very small pieces of charcoal rested directly above several flat basalt slabs, and measured 50cm and 70cm in minor and major axes. No other evidence of hearth construction was observable, and dimensions of the structure could not be ascertained. Two small fragments of unburned bone which could not be identified as to part or species were recovered from the vicinity of the hearth; and a single fragment of a bivalve Mollusk was recovered from grid unit N22, slightly downslope from the hearth.

Firecracked quartzite cobbles and basalt were distributed in varying densities downslope to the west and south of the hearth feature. The maximum extent of this distribution was ca. 4m by 7m, but highest densities were restricted to five contiguous grid units situated between one and four meters directly west and downslope of the hearth. It is possible that the comparatively great

areal extent of firecracked rock in association with this hearth feature is due to downward erosion of a once more discrete concentration situated adjacent to the hearth itself.

Artifactual Assemblages

Ceramic Artifacts

No ceramic artifacts were recovered.

Lithic Artifacts

A total of 198 lithic artifacts was recovered from 37 of the 60 grid units comprising the provenience, resulting in a density of 5.32 artifacts per square meter for those grid units encompassing artifactual debris, and 3.28 artifacts per square meter for the provenience overall. The majority of lithic artifacts was debitage (61%) and small angular debris (23%). Debitage and small angular debris were distributed in two concentrations within the provenience. Highest densities of such artifacts were recovered from four contiguous grid units (P23, P24, P35 and O26) situated adjacent and to the east and north of the hearth feature.

A more dispersed distribution of debitage and small angular debris was situated between 2m and 6m downslope and southwest of the hearth feature. This latter distribution was lower in density than the former, and was encompassed by nine contiguous grid units.

1. Material Selection

Lithic artifacts were predominantly manufactured from basalt (51%, 5 taxons), chalcedony (29%, 6 taxons), and obsidian (16%, 6 taxons). An additional eight artifacts were manufactured from five taxons of chert, and a single sandstone artifact was represented. All materials are available within the study area, and 40% of cortical surfaces exhibited by basalts were waterworn, indicating the possible selection of some basalt materials from recent beach areas in the near vicinity of the site location.

2. Manufacture

Several material taxons were represented by assemblages which indicated artifact manufacture was undertaken within the provenience locale. These included two taxons of basalt (3701, 3700), two taxons of chalcedony (1091, 1215) and two taxons of obsidian (3520, 3530). Nine cores and three pieces of basalt large angular debris were recovered, as were two pieces of large angular debris and a single core of chalcedony. No larger by-products of obsidian reduction were encountered. All six of the above taxons were characterized by substantial frequencies of cortical and noncortical debitage, as well as pieces of small angular debris. In general, reduction technique employed for all materials appears to have been similar, involving preparation of a noncortical platform and freehand percussion detachment of debitage.

3. Tool Utilization

Milling activities were represented by two fragments of a shallow basin metate situated in grid units O24 and P24 adjacent to the hearth, a mano fragment situated in grid L24 three meters west of the hearth, and another mano fragment situated outside the provenience locale in grid unit Q25 two meters east of the hearth. Three pieces of utilized large angular debris were recovered from the provenience, as was a single basalt unifacially retouched tool which had been used in a sawing fashion. No fragments of bifacially retouched artifacts were found, but two resharpening flakes and eight retouch flakes of different materials indicate either manufacture or utilization of at least two basalt bifaces, two obsidian bifaces, and a single chalcedony biface.

Twenty-three pieces of debitage exhibited a total of 28 utilized edges, only three of which were retouched. Two of these artifacts were obsidian (two edges, one retouched); 16 were basalt (21 edges, two retouched) and five were chalcedony (five edges, none retouched). Little diversity was exhibited in edge outline shape; no projections were observed, and only two edges were concave. The remaining edges were either straight (13), convex (8) or concave-convex (5). Sixteen of these edges exhibited abrasion resulting in bidirectionally rounded (9), unidirectionally rounded (3), beveled (1) or flat (3) cross-sections, 13 of which exhibited polish and seven of which were characterized by perpendicular striations as well. The remaining ten edges were characterized predominantly by either unidirectional or bidirectional step fracture. Artifact utilization within the provenience thus seems to have been restricted to sawing and scraping usage modes requiring relatively acute edge angles and which resulted frequently in production of polish.

PROVENIENCE 5

Provenience 5, as analytically defined, is situated in the central portion of the site location, directly north and adjacent to Provenience 4.

Features

No intact features or structural elements which could be designated as deriving from partially intact features were present within the provenience boundaries. Evidence of hearth utilization was, however, apparent as four distinct concentrations of firecracked quartzite cobbles and basalt clasts. The largest of these concentrations was encompassed by nine contiguous grid units in the southwestern portion of the provenience. The smaller concentrations were crescentic in shape, and ranged in size from two to four square meters. No good evidence of hearth facilities was recovered through excavation, but the density and spatial distribution of firecracked rock indicate as many as three possible epicenters of hearth utilization may have once existed within the provenience locale.

Artifactual Assemblage

Ceramic Artifacts

A single sherd from a Cieneguilla G/Y olla was recovered from grid unit K28, within the vicinity of the largest firecracked rock concentration. This sherd represents the only evidence of that particular vessel within the site location.

Lithic Artifacts

A total of 191 lithic artifacts was recovered from 60 of the 88 grid units comprising the provenience locale, for a density of 3.18 artifacts per square meter among those grid units exhibiting artifacts, and 2.17 artifacts per square meter overall. The majority of these artifacts were debitage (66%) and small angular debris (29%).

Debitage and small angular debris, as monitored by weight, were distributed discontinuously in small concentrations throughout the provenience. Five of these concentrations are 1.0m square in extent, and are situated adjacent to the three smaller piles of firecracked rock, while two of the debitage concentrations are two square meters in extent, and are situated partially within the larger firecracked rock pile. The three larger byproducts of tool manufacture are distributed in grid units not encompassing high densities of firecracked rock or debitage.

1. Material Selection

The majority of lithic artifacts within the provenience were manufactured from basalt (54%, 4 taxons), followed by obsidian (22%, 8 taxons), chalcedony (20%, 5 taxons), and chert (3%, 3 taxons). One piece of silicified wood debitage and a quartzite mano were recovered as well. With the exception of a single piece of 3510 obsidian, all materials are locally available within the study area. Slightly less than half the basalt artifacts exhibiting cortical surfaces were derived from raw materials characterized by waterworn cortex, and may have been selected from beach areas directly upstream of the site location.

2. Manufacture

Debitage and angular debris from five material taxons were present in frequencies substantial enough to suggest at least minimal artifact manufacture within the provenience locale. These included obsidian (types 3520, 3530), basalt (type 3701), and chalcedony (types 1091, 1215). Fifty percent of the obsidian artifacts exhibited cortical surfaces, as did 34% of the chalcedony artifacts, and nearly 31% of the basalt artifacts. Basalt and chalcedony debitage was predominantly manufactured after preparation of noncortical striking platforms, whereas obsidian raw materials were apparently reduced from raw materials which had not been altered through platform preparation. Although no direct evidence of bipolar manufacture is evident for any material, a relatively high percentage of the obsidian angular debris is characterized by cortical surfaces. In addition, the mean maximum size of obsidian small angular debris exhibiting cortex (27.0mm), is considerably greater than the mean length of obsidian debitage exhibiting cortex (16.9mm) within the Provenience 5 assemblage. Freehand percussion techniques, however, generally result in production of cortical debitage significantly larger in size than small angular debris. It is thus possible that obsidian raw materials being manufactured were small in size, and were reduced through bipolar rather than freehand techniques.

3. Tool Utilization

No facially retouched artifacts, hammerstones, or massive processing implements other than milling implements were recovered. A single two-hand mano manufactured from quartzite which exhibited two grinding surfaces characterized by hematite stains was found in grid unit M30. Two fragments of a slab metate and another fragment of a metate of undetermined category were recovered from the same grid unit. A possible third fragment of the slab metate was found in grid unit O34.

A total of six resharpening flakes and four retouch flakes were recovered. These ten flakes represent manufacture or usage of at least two obsidian tools, one basalt tool, one chert tool and one chalcedony tool.

A total of 17 pieces of debitage or small angular debris exhibited 20 utilized edges. Four of these tools were manufactured from obsidian (four edges), ten from basalt (13 edges), two from chalcedony (two edges), and one from chert (one edge). An additional edge of the chert tool had been unidirectionally retouched to a sinuous convex outline shape, but exhibited no evidence of utilization.

Four of the utilized edges were concave in outline shape, two of which had been unidirectionally retouched; ten were straight, three of which had been unidirectionally retouched; four were convex, one of which had been unidirectionally retouched; and two were concave-convex, one of which had been bidirectionally retouched.

Of the four concave edges, three exhibited unidirectional perpendicular step fracture indicative of scraping utilization, while one exhibited unidirectional diagonal step fracture and nibbling indicative of possible sawing or whittling usage. Seven of the remaining straight, convex or concave-convex edges exhibited evidence of sawing usage in the form of even rounding in conjunction with polish or striations; and the remaining edges exhibited evidence of unidirectional scraping usage alone, or possible evidence of whittling usage in the form of unidirectional perpendicular or diagonal step fracture, crescentic scars or nibbling. Many of the edges characterized by step fractures were relatively acute in edge angle, which may indicate usgae for whittling rather than scraping tasks.

PROVENIENCE 6

Features

No features and no evidence of hearth utilization of any kind were recovered from this provenience. A fragment of bone which could not be identified as to part or species was recovered from grid unit E59.

Artifact Assemblage

Ceramic Artifacts

No ceramic artifacts were recovered.

Lithic Artifacts

A total of 227 lithic artifacts was recovered from 44 of the 67 grid units comprising the provenience, and thus exhibited a density of 5.11 artifacts per square meter for those grid units in which artifacts were found, and an overall density of 3.36 artifacts per square meter for the provenience as a whole. The majority of lithic artifacts were pieces of debitage (70%) and small angular debris (27%).

The debitage and small angular debris were distributed in three distinct concentrations. Two of these concentrations are crescentic in shape, and are situated opposite one another at a distance of 3m to 4m apart. The two concentrations open inward toward one another, and the intervening space between them is largely devoid of artifactual remains. Highest densities of artifacts comprising the larger, westernmost concentration are encompassed by grid units D57-59, and C59-61; and highest densities of artifacts comprising the smaller, easternmost concentration are encompassed by grid units H59, H61-62 and I60. A third concentration of debitage and small

angular debris is situated 1.0m south of the larger crescentic distribution, and is encompassed by grid units C55, D54 and D55. The larger by-products of tool manufacture, such as large angular debris and cores, are generally distributed adjacent to, rather than within the debitage concentrations.

1. **Material Selection**

Of the 227 lithic artifacts recovered from this provenience, the vast majority were manufactured from basalts (86%, 6 taxons), followed by chalcedonies (10%, 3 taxons), and cherts (2%, 3 taxons). A single artifact each of obsidian, quartzite, greenstone and jasperoid were found as well, bringing the total number of material taxons represented to 16.

All materials are locally available within the study area, generally within close proximity to the site location. Over 89% of cortical surfaces exhibited by basalt artifacts were waterworn, which indicates that basalt materials were predominantly selected from modern beaches along the Rio Grande. One such beach area is situated directly upstream from the site location.

2. **Manufacture**

By-products of basalt manufacture are well in evidence as five cores, two pieces of large angular debris, and a hammerstone. Over 50% of all materials exhibited cortical surfaces. A relatively high percentage of angular debris exhibited cortex as well. Fifty-one percent of all basalt platforms exhibited cortex, generally in the absence of dorsal cortex, which suggests that raw basaltic materials being manufactured were tabular rather than nodular in form.

3. ***Tool Utilization***

Although a single hammerstone was recovered from the provenience, no other massive processing tools, milling implements, or facially retouched artifacts were found. A total of four resharpening flakes (three basalt, one chert) and six retouch flakes (five basalt, one chalcedony) were found, indicating usage of at least four bifacially retouched tools within the provenience locale. The mean lengths of the basalt and chalcedony retouch and resharpening flakes were in excess of 2.5cm, suggesting that the tools themselves were rather large in size.

A total of ten pieces of debitage or small angular debris exhibited 11 unretouched edges. One of these tools was manufactured from obsidian, six from basalt, and three from chalcedony, one of which exhibited two utilized edges. Three edges were concave in outline shape, and all exhibited scraping utilization. Six of the remaining edges were straight, and two were concave-convex. Both scraping (four edges) and sawing (four edges) utilization are indicated by wear patterns upon these edges. Considerable diversity among the kinds of fracture patterns and presence or absence of polish was apparent, which suggests that some variability among the kinds of materials operated upon with the edges existed. No convex edges or projections were present.

PROVENIENCE 7

Provenience 7, as analytically defined, is situated directly east of Provenience 2, and directly north of Provenience 3.

Features

No feature or any evidence of hearth utilization was recovered from the provenience.

Artifactual Assemblage

Ceramic Artifacts

A single fragment of Cieneguilla G-P was found in grid unit F43. This sherd is apparently from the same broken vessel distributed across the southwestern portion of Provenience 2.

Lithic Artifacts

A total of 21 lithic artifacts was recovered from ten of the 21 grid units comprising the provenience locale, resulting in an average density of 2.10 artifacts per square meter for the ten grids, and 1.00 artifacts per square meter for the entire provenience locale. With the exception of a single basalt core, artifacts were either pieces of debitage (62%) or small angular debris (33%). A small concentration of lithic artifacts was encompassed by grid unit E49.

1. **Material Selection**

Thirteen of the 21 artifacts recovered from the provenience were manufactured from basalt, 11 from type 3701, and two from type 3050. Six artifacts were manufactured from obsidian (2 taxons), and two from type 1215 chalcedony. The latter two were pieces of small angular debris. All lithic artifacts were manufactured from materials available within the study area.

2. **Manufacture**

None of the material taxons were represented by frequencies of debitage or small angular debris substantial enough to indicate that reduction activities had been performed within the provenience boundaries. Only one piece of small angular debris was of the same material type as the single basalt core (3050), and the remaining materials were characterized predominantly by noncortical platforms and dorsal surfaces.

3. **Tool Utilization**

No milling implements, massive processing tools, hafted tools or hammerstones were found in the provenience, although a single obsidian retouch flake may indicate utilization of a biface. Four pieces of debitage, two of obsidian and two of basalt, exhibited a single unretouched utilized edge apiece. All four exhibited wear patterns indicating extensive utilization in sawing fashion against relatively resistant materials, and the two obsidian tools were backed opposite their working edges. Three of the edges were straight, and one was convex.

PROVENIENCE 8

Features

No intact features were encountered within the provenience locale, although evidence of hearth usage was recovered as a relatively low density of firecracked rock and an occasional basalt slab or clast which might have served as structural elements of hearth features. The

slabs and clasts were widely dispersed throughout the provenience, and firecracked rock, while recovered predominantly in the northern and eastern portions of the provenience, exhibited no centralized concentration.

Artifactual Assemblage

Ceramic Artifacts

No ceramic artifacts were recovered from within the provenience locale.

Lithic Artifacts

A total of 44 lithic artifacts was recovered from 21 of the 86 grid units encompassing the provenience, and thus exhibited a density of 2.10 artifacts per square meter for those grid units containing artifacts, and 0.51 artifacts per square meter overall for the provenience location.

Densities of debitage, as monitored by weight, were relatively low. Debitage was distributed in a series of small concentrations predominantly within the northern and eastern portions of the provenience. The majority of lithic artifacts were pieces of debitage (70%) and cores (14%).

1. Material Selection

Sixty-eight percent of the lithic artifacts were manufactured from four taxons of basalt, followed by obsidian (16%, 4 taxons), and chalcedony (11%, 4 taxons). Two artifacts were manufactured from a single taxon of chert. All materials are available within the study area.

2. Manufacture

Although only one taxon of basalt (3701) exhibited frequencies of debitage and small angular debris indicative of minimal manufacturing activities within the provenience locale, a total of six cores from three different taxons of basalt, and a single piece of chert large angular debris were recovered as well. Five of these cores were distributed in the vicinity of one debitage concentration near the east central portion of the provenience.

3. Tool Utilization

Milling activities are possibly represented by a metate fragment recovered from grid unit O13. A utilized core was recovered from grid unit P13 to the east, and an obsidian projectile point was recovered from grid unit O14 to the north. One resharpening flake and two retouch flakes of 3520 obsidian indicate either manufacture or usage of yet another obsidian biface within the provenience.

A total of seven pieces of debitage exhibited ten edges. One obsidian artifact exhibited three straight edges, all of which had been used in scraping fashion. Five basalt artifacts exhibited six edges ranging from concave (two edges), straight (two edges) to convex (two edges) in outline shape. Wear patterns were predominantly bidirectional step fracture and/or bidirectional rounding. One chalcedony artifact exhibited a single concave-convex edge characterized by unidirectional step fracture, crescentic scars and nibbling.

TABLE 9.52

LA 12456
DISTRIBUTION OF CERAMICS

CERAMIC TYPE, TEMPER & FORM		PROV. 1 O55	PROV. 2 H47	J43	J44	J45	K44	PROV. 3 E33	G40	PROV. 5 K28	PROV. 7 F43	TOTAL
Cieneguilla G/Y												
Rhyolite tuff	bowl*	–	1	–	–	–	1	–	1	–	–	3
Augite latite	olla	–	–	–	–	–	–	–	–	1	–	1
Cieneguilla G-P												
Rhyolite tuff	bowl*	–	–	1	4	1	–	–	–	–	1	7
Kotyiti Glaze/Buff	jar	–	–	–	–	–	–	1	–	–	–	1
Blind Indented Corrugated												
Rhyolite tuff	jar	1	–	–	–	–	–	–	–	–	–	1
TOTALS		1	1	1	4	1	1	1	1	1	1	13

* possibly same vessel

TABLE 9.53

LA 12456–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3523	–	2	–	–	–	–	–	–	–	–	–	2
	3524	2	–	–	–	–	–	–	–	–	–	–	2
	3525	–	–	1	–	–	–	–	–	–	–	–	1
	3530	–	–	1	–	–	–	–	–	–	–	–	1
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	73	23	4	7	1	–	–	–	–	–	–	108
	3700	17	5	–	–	–	–	–	–	–	–	–	22
	3030	1	–	–	–	–	–	–	–	–	–	–	1
	3050	10	2	–	3	2	2	–	–	–	–	–	19
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
	1090	3	–	–	–	–	–	–	–	–	–	–	3
Chalcedony:	1052	1	–	–	–	–	–	–	1	–	–	–	2
	1053	–	1	–	–	–	–	–	1	–	–	–	2
	1091	2	1	–	–	–	–	–	1	–	–	–	4
	1215	9	4	–	–	–	–	–	–	–	–	–	13
Quartzite, Jasp.:	4000	3	–	–	1	–	1	1	–	–	–	–	6
Granite & Ands.:	3101	–	–	–	1	–	–	–	–	–	–	–	1
Provenience Totals:		124	38	6	12	3	3	1	3	0	0	0	190
PROVENIENCE 2													
Obsidian:	3523	2	–	2	–	–	–	–	1	–	–	–	5
	3526	1	–	–	–	–	–	–	–	–	–	–	1
	3530	2	–	1	–	–	–	–	–	–	–	–	3
Basalt:	3701	1	4	–	–	–	–	–	–	–	–	–	5
	3050	1	1	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	2	–	–	–	–	–	–	–	–	–	–	2
	1091	–	1	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		9	6	3	0	0	0	0	1	0	0	0	19
PROVENIENCE 3													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3523	1	1	1	–	–	–	–	–	–	–	–	3
	3524	3	1	2	–	–	–	–	–	–	–	–	6
	3525	1	–	–	–	–	–	–	–	–	–	–	1
	3530	–	–	–	–	–	–	–	1	–	–	–	1
Basalt:	3701	12	9	–	–	–	1	–	–	–	–	–	22
	3430	–	–	–	–	–	–	–	–	–	1	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	–	1	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1053	2	–	–	–	–	–	–	–	–	–	–	2
	1091	–	2	–	–	–	–	–	–	–	–	–	2
	1215	3	2	–	–	–	–	–	–	–	–	–	5
Silicified Wood:	1112	1	1	–	–	–	–	–	–	–	–	–	2
Granite & Ands.:	3000	–	–	–	–	–	–	–	–	–	1	–	1
Provenience Totals:		25	17	3	0	0	1	0	1	0	2	0	49

TABLE 9.53 (con't)

LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 4													
Obsidian:	3520	7	5	–	–	–	–	–	–	–	–	–	12
	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3524	2	–	1	–	–	–	–	–	–	–	–	3
	3526	3	1	–	–	–	–	–	–	–	–	–	4
	3530	6	4	2	–	–	–	–	–	–	–	–	12
	3500	–	1	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	36	13	3	6	1	3	–	–	–	–	–	62
	3700	15	4	1	2	1	–	–	1	–	–	–	24
	3730	1	–	–	–	–	–	–	–	–	–	–	1
	3050	6	–	–	1	1	–	–	–	–	–	1	9
	3030	–	–	–	–	–	–	–	–	–	2	–	2
	3430	1	–	–	–	–	–	–	–	–	–	1	2
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	2	1	–	–	–	–	–	–	–	–	–	3
	1072	1	–	–	–	–	–	–	–	–	–	–	1
	1090	2	–	–	–	–	–	–	–	–	–	–	2
	1430	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	6	1	–	–	–	–	–	–	–	–	–	7
	1053	4	5	–	–	–	–	–	–	–	–	–	9
	1091	12	4	2	–	1	–	–	–	–	–	–	19
	1214	2	1	–	–	–	–	–	–	–	–	–	3
	1215	9	5	–	–	–	–	–	–	–	–	–	14
	1340	2	1	–	–	1	–	–	–	–	–	–	4
Sandstone:	2030	–	–	–	–	–	–	–	–	1	–	–	1
Provenience Totals:		120	46	9	9	5	3	0	1	1	2	2	198
PROVENIENCE 5													
Obsidian:	3520	9	4	1	–	–	–	–	–	–	–	–	14
	3523	1	2	–	–	–	–	–	–	–	–	–	3
	3524	3	–	–	–	–	–	–	–	–	–	–	3
	3526	–	1	–	–	–	–	–	–	–	–	–	1
	3521	1	1	–	–	–	–	–	–	–	–	–	2
	3525	2	–	–	–	–	–	–	–	–	–	–	2
	3530	8	5	3	–	–	–	–	–	–	–	–	16
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	56	29	4	–	3	–	–	–	–	–	–	92
	3700	5	1	–	–	–	–	–	–	–	–	–	6
	3730	–	–	–	–	–	–	–	–	–	1	1	2
	3050	1	–	–	–	–	–	–	–	–	–	1	2
Chert:	1051	2	1	–	–	–	–	–	–	–	–	–	3
	1070	1	–	–	–	–	–	–	–	–	–	–	1
	1090	–	2	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	1	–	1	–	–	–	–	–	–	–	–	2
	1053	7	–	–	1	–	–	–	–	–	–	–	8
	1091	7	3	1	–	–	–	–	–	–	–	–	11
	1214	2	–	–	–	–	–	–	–	–	–	–	2
	1215	8	8	–	–	–	–	–	–	–	–	–	16
Silicified Wood:	1140	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	–	–	–	–	–	–	–	–	1	–	–	1
Provenience Totals:		116	57	10	1	3	0	0	0	1	1	2	191

TABLE 9.53 (con't)

LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 6													
Obsidian:	3523	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	41	30	6	2	–	–	–	–	–	–	–	79
	3700	8	2	–	–	–	–	–	–	–	–	–	10
	3030	13	–	–	–	1	–	–	–	–	–	–	14
	3050	62	23	2	3	1	–	–	–	–	–	–	91
	3400	1	–	–	–	–	–	–	–	–	–	–	1
	3430	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	–	–	1	–	–	–	–	–	–	–	–	1
	1090	1	1	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1091	6	–	–	–	–	–	–	–	–	–	–	6
	1214	2	–	–	–	–	–	–	–	–	–	–	2
	1215	10	4	1	–	–	–	–	–	–	–	–	15
Quartzite, Jasp.:	4000	–	1	–	–	–	–	–	–	–	–	–	1
	1502	1	–	–	–	–	–	–	–	–	–	–	1
Greenstone:	4526	–	–	–	–	–	–	1	–	–	–	–	1
Provenience Totals:		148	61	10	5	2	0	1	0	0	0	0	227
PROVENIENCE 7													
Obsidian:	3523	2	1	1	–	–	–	–	–	–	–	–	4
	3530	–	1	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	9	3	–	–	–	–	–	–	–	–	–	12
	3050	1	–	–	1	–	–	–	–	–	–	–	2
Chalcedony:	1215	–	2	–	–	–	–	–	–	–	–	–	2
Provenience Totals:		12	7	1	1	0	0	0	0	0	0	0	21
PROVENIENCE 8													
Obsidian:	3520	1	–	3	–	–	–	–	–	–	–	–	4
	3526	–	1	–	–	–	–	–	–	–	–	–	1
	3530	–	1	–	–	–	–	–	–	–	–	–	1
	3523	–	–	–	–	–	–	–	2	–	–	–	2
Basalt:	3701	14	1	–	1	–	–	–	–	–	–	–	16
	3700	5	–	–	2	–	–	–	–	–	–	–	7
	3430	–	–	–	–	–	–	–	–	–	1	–	1
	3050	2	–	–	3	–	–	–	–	–	–	–	5
Chert:	1051	1	–	–	–	1	–	–	–	–	–	–	2
Chalcedony:	1053	2	–	–	–	–	–	–	–	–	–	–	1
	1091	1	–	–	–	–	–	–	–	–	–	–	1
	1215	1	–	–	–	–	–	–	–	–	–	–	1
	1340	–	1	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		27	4	3	6	1	0	0	2	0	1	0	44

SUMMARY

Dating

The occupation of LA 12456 can be tentatively assigned to the Late Archaic or Early Basketmaker phase of the Archaic Period, based predominantly upon obsidian hydration readings. A total of ten obsidian artifacts recovered from the surface of five different provenience locales within the site location was subjected to obsidian hydration analysis. The adjusted mean hydration reading for the site was ultimately derived from six of those artifacts, and was 8.09 microns of hydration.

This is in contrast to the Anasazi Period sites within the project area, which are characterized by adjusted mean hydration readings ranging between 4.38 microns and 5.16 microns.

Although 13 fragments of ceramic vessels manufactured during the Anasazi Period were recovered from the entire site, the majority of those fragments were localized in distribution in the southwestern portion of Provenience 2. Ten of the fragments derive from possibly the same vessel, a Cieneguilla G-P bowl, and the remaining three fragments represent three different vessels. It thus seems apparent that the ceramic fragments were not deposited at the site location in the same contexts of routine activity performance which resulted in deposition of other features and artifactual debris characterizing provenience locales defined.

Procurement, Processing and Consumption

The structure of material distribution across LA 12456 seemed to reflect two different contexts of space utilization within the site boundaries. The majority of provenience locales (Proveniences 1, 2, 3, 4, 5 and 8) were characterized by evidence of hearths, and patterning in the distribution of artifactual remains which indicated activity performance in the near vicinity of hearth features. Provenience 6 and Provenience 7 exhibited no evidence of hearth construction or usage, but were, however, characterized by distributions of artifactual debris indicating patterned activity performance.

Variability among the kinds of hearths constructed, and in the kinds of activities performed nearby those hearths is indicated as well. Although only one hearth feature encountered during excavation was still relatively intact (Provenience 2), physical evidence from several provenience locales indicates that two kinds of hearths were constructed.

The first of these types is represented by the partially intact hearth feature in Provenience 2. That hearth was essentially a rectangular, slab-lined pit. Evidence of the existence of possibly two more such structures within Provenience 1 was recovered as a distribution of slab elements similar in size and shape to those employed in construction of the Provenience 2 hearth.

Direct evidence of foodstuffs being processed for consumption through use of these hearths was found through flotation of fill in the Provenience 2 feature. Microscopic analysis of a flotation sample resulted in documentation of both burned and unburned bone fragments, shell fragments and a single burned seed. None of these were identified as to species, but the range of classes represented reflects a procurement strategy which was not highly focal in nature. An additional macroscopic shell fragment of a terrestrial gastropod was recovered adjacent to the hearth facility, but the degree to which its presence represents human consumption of terrestrial snails during the occupation of the site, or can be attributed to the natural occurrence of such species within the general vicinity of the site location is unknown at present.

The specific techniques of food processing undertaken in conjunction with slab-lined hearths apparently did not involve substantial use of heat retainers (such as quartzite cobbles or small basalt clasts) and did not involve use of milling implements. Wear patterns and edge outline shapes of utilized tools recovered from Provenience 1 indicated a restricted set of usages, predominantly for sawing activities. Possible evidence of utilization of as many as three bifaces was indicated through retouch and resharpening flakes.

A second kind of hearth facility constructed within the site location is represented through concentrations of basalt clasts and occasional slabs which occur in close proximity to dense distributions of firecracked rock. Although no intact facilities of this sort were encountered during excavation, physical evidence from one feature in Provenience 4 indicated that the hearths were roughly oval in outline shape, were constructed with slab-lined bases, and measured less than a meter in diameter.

One distinct hearth facility of this type was recovered in Provenience 4, and another probable, although substantially deflated, facility is indicated in Provenience 3. Other possible locations of hearth activity within the site boundaries were represented predominantly through concentrations of firecracked rock. These include one area in the northern portion of Provenience 8 and three possible hearth area loci in Provenience 5.

Specific techniques of food processing undertaken in conjunction with hearth areas of this type, unlike those undertaken in conjunction with slab-lined hearths, involved substantial use of heat retainers (as evidenced by firecracked quartzite cobbles and basalt) and milling implements. Metates or metate fragments occurred in close proximity to five of the six probable or possible hearth areas in Proveniences 3, 4, 5 and 8, and manos or mano fragments were situated nearby two of the locations.

Direct evidence of the kinds of food resources being processed for consumption in these areas was rather sparse. A shell fragment of a bivalve mollusk and two small bone fragments which could not be identified as to part or species were recovered from within the vicinity of the hearth in Provenience 4, and no other faunal or floral remains were evident. The presence of milling implements indicates, however, that floral seed bearing species may have constituted another class of food resources being processed and consumed.

Assemblages of tools other than milling implements recovered within provenience locales encompassing the second type of hearth area (Proveniences 3, 4, 5 and 8) were relatively similar in content.

All were characterized by fragments or flakes detached from three to five different bifaces, and utilization of at least one large implement (such as a core or piece of large angular debris) was evident within Proveniences 3, 4 and 8. Each assemblage of utilized debitage

included at least two concave edges which had been utilized in scraping or whittling fashion. The majority of utilized edges were straight, convex or concave-convex in outline shape, however, and were in general characterized by relatively acute edge angles and wear patterns indicative of both scraping and sawing utilization. The kinds of media operated upon through both scraping and sawing had resulted in a substantial number of rounded and polished edge margins within all assemblages.

Two provenience locales within the site (Proveniences 6 and 7) were characterized by no evidence of hearth construction or utilization. The artifact assemblage from Provenience 6 was characterized by a relatively great number of cores and high percentages of cortical debitage and small angular debris, which may indicate that the debitage concentrations within the locale were deposited in part as a function of tool manufacture. Evidence of utilization of at least four bifaces and ten pieces of debitage was apparent, however. Edge outline shapes were concave, straight and concave-convex, and considerable diversity in edge angle and wear pattern variability was exhibited.

Very few artifacts were recovered from Provenience 7, most of which were localized within a single grid unit. A single retouch flake of obsidian indicated the possible use of a biface, and only four other utilized tools were found, all of which had been employed in sawing fashion.

The degree of variability in hearth construction and artifact content exhibited among provenience locales within LA 12456 is considerably greater than such variability characteristic of other, presumably contemporaneous site locations within the project area. The degree to which this variability represents activity differentiation during single occupational events of the site, or changes in the kinds of activities performed at the site location through a sequential set of occupational events is subject to question.

LA 12463

Location and Physiographic Situation

LA 12463 is a Late Archaic site characterized by construction and use of two or possibly three hearth facilities, and associated lithic artifactual debris. The site is located in White Rock Canyon on the east side of the Rio Grande River, some 935 meters upstream from the mouth of Drainage Basin 6, or opposite and 225 meters downstream from the mouth of Bland Canyon.

LA 12463 is situated on the northern side and near the mouth of a small steep sided canyon which drains into the Rio Grande River from the east. The site is at an elevation of 5290 ft, 40 meters from the river's edge, and is located on a southerly sloping sand dune at the base of a steep talus slope to the north. The ground surface upon which the site occurs exhibits approximately a 10% grade from north to south, and is characterized by basaltic talus rubble at its northern or upper extent, which overlies an aeolian sand deposit constituting the southern or lower portion of the site location. LA 12463 is bounded to the east and west by small runoff drainages which flow from north to south, and is bisected by a similar drainage.

LA 12463 is located within the Upper Sonoran Juniper vegetative community, and the vegetative structure within the vicinity of the site location is an open Juniper woodland. Dominant species include juniper, rabbitbrush, snakeweed, apache plume, black grama grass, cholla and star cactus. Prickly pear cactus and narrow leaf yucca occur infrequently. Pinyon pine and yucca baccata are distributed sparsely on the steeper talus slopes to the north and east of the site location.

Methodology of Excavation

LA 12463 was documented during survey as a single provenience site location exhibiting evidence of a hearth and an associated concentration of firecracked basalt at its northern perimeter, and a scatter of lithic artifacts and occasional fragments of firecracked rock to the south and downhill of the hearth feature.

A 1.0m x 1.0m grid system measuring 10m north-south by 32m east-west was established over the entire artifact distribution visible from the surface. The north-south baseline of this grid was oriented essentially uphill-downhill. Distribution maps for each 1.0m x 1.0m grid unit were initially drawn to document the location of all surficially visible artifactual remains, firecracked rock, basalt clasts, slabs, and vegetation.

Four test trenches were then excavated at various locations within the site, including grid units R18, S18, T18; grid units P19-20; grid units L22, M22; and grid unit Q16. All of these test excavations indicated that artifactual remains were entirely surficial in nature, and that both hearth elements and firecracked rock fragments were situated either directly on the existing surface, or no more than ca. 5cm below the present surface.

Excavation of the remaining grid units was then undertaken as intensive collection of all artifactual remains, employing 1.0m x 1.0m grid units for horizontal control. Nonfirecracked clasts and slabs, and firecracked rock fragments were weighed within each grid unit according to kind and material.

Site Description

Although LA 12463 was originally documented during survey as a single provenience site location, the site was stratified into four analytical units subsequent to excavation, based upon the spatial distribution of possible hearth areas as monitored by weight of hearth elements and firecracked rock, and upon the relative density of debitage and small angular debris as monitored by weight.

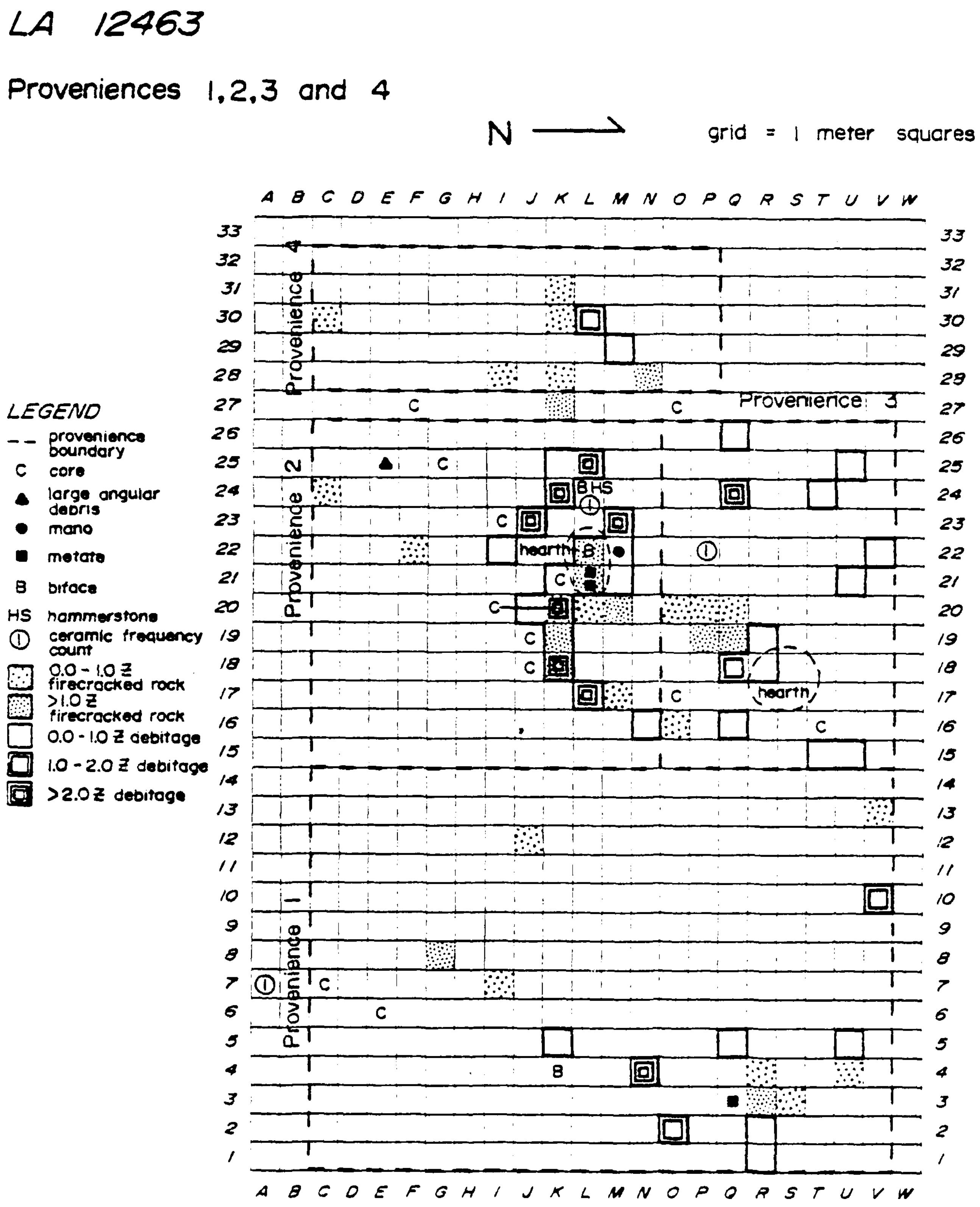

FIG. 9.37 LA 12463—Proveniences 1, 2, 3 and 4

PROVENIENCE 1

Features

A single hearth feature with an associated pile of firecracked basalt was in the northeast quadrat of Provenience 1. The hearth was not intact, and was comprised of a more or less oval distribution of large basalt clasts enclosing an area measuring 2.5m by 2.0m. Subsurface excavations within the feature yielded no evidence of charcoal or ash, and demonstrated that the hearth elements were situated directly upon the existing ground surface. Directly south and downhill from the hearth elements was a concentration of firecracked quartzite cobbles and basalt fragments. This concentration measured 2.0m by 3.0m with highest densities in grid units P19 and Q19. A test trench through the firecracked rock concentration (grid units P19, P20) revealed it to be entirely surficial in nature as well.

The results of subsurface testing in these two features and a third trench cut into the side of a shallow drainage running from north to south two meters east of the features (grid unit Q16), indicated that the substrate of the site location is predominantly aeolian sand interbedded with colluvially deposited sand and gravel. All evidence of human occupation of the site location is restricted to the existing surface.

Ceramic Artifacts

A single body sherd from a glaze polychrome olla was found in grid unit P22, and represented the only fragment of that vessel within the site location.

Lithic Artifacts

A total of 65 lithic artifacts was recovered from 30 of the 96 grid units comprising the provenience, and thus exhibit a mean frequency of 1.60 artifacts per square meter for these grid units encompassing artifacts, and a mean frequency of 0.67 artifacts per square meter overall. The majority of these were pieces of debitage (91%) and small angular debris (6%). The highest densities of debitage, as monitored by weight, were exhibited in three small locales. One of these was situated directly south of the hearth feature, and adjacent to the eastern portion of the large concentration of firecracked rock; a second was situated some six meters west and slightly south of the hearth; and the third was situated three meters east and slightly north of the hearth feature.

1. Material Selection

The majority of materials from which lithic artifacts were manufactured were basalts (65%, 4 taxons), followed by obsidian (17%, 4 taxons), and chalcedonies (14%, 4 taxons). Two artifacts of chert taxons and one of jasperoid are also present. Despite the number of material taxons represented (14), the majority of artifacts were manufactured from only three: 3701 (basalt), 3530 (obsidian) and 1053 (chalcedony). All materials are available from source areas within the study area. The majority of cortical surfaces exhibited by basalt artifacts were waterworn, and the parent material may have been selected from modern beach areas along the river, adjacent to the site location.

FIG. 9.38 LA 12463 Feature 1

2. **Manufacture**

Thirty-four percent of all debitage and small angular debris within the provenience locale exhibited cortical surfaces. Chalcedonies exhibited a greater relative percentage of decortication flakes (50%) than did obsidians (36%) or basalts (28%). Cortex occurred solely on the dorsal surfaces of all materials. Two basalt cores were present within the provenience, but no pieces of large angular debris or hammerstones were found.

3. **Tool Utilization**

No facially retouched tools or grinding implements were recovered. One basalt core exhibited considerable battering along three edges, suggesting its usage as a chopper against a resistant anvil. A total of eight pieces of debitage and small angular debris exhibited retouched or utilized edges. An additional piece of obsidian debitage exhibited a unidirectionally retouched edge with no evidence of utilization, and one chalcedony flake exhibited a bidirectionally retouched edge with evidence of bidirectional perpendicular step fracture. The remaining seven tools, one of which exhibited three utilized edges, were manufactured from basalt.

Edges of these remaining tools were generally unretouched and exhibited wear patterns suggesting their use in unidirectional scraping against relatively resistant media which resulted in production of perpendicular step fractures, but no rounding or polish. Two of the edges exhibited no step fracture and flat cross-sections, again suggestive of scraping usage. Some diversity in specific scraping functions is implied, however, in the range of edge outline shapes: concave (2), straight (4), convex (2), and concave-convex (1).

PROVENIENCE 2

Features

A possible, severely eroded hearth feature is indicated by a concentration of basalt slab elements recovered from grid units L21 and L22. The slabs were resting largely upon the existing ground surface, and subsurface excavations within the features revealed no evidence of charcoal or ash. Occasional large basalt clasts similar to those comprising the hearth feature in Provenience 1 were distributed between 2m and 8m downhill from the slab concentration, and may have been part of the hearth construction at one time.

Smaller fragments of firecracked quartzite cobbles and firecracked basalt were distributed in highest density within the grid units encompassing the basalt slabs, and in decreasing density to the west and southwest of the presumed hearth location. Occasional firecracked fragments were found throughout Provenience 2 to the south and west of the hearth, but the major concentration of such hearth usage by-products was restricted to within three meters of the feature itself. A single small fragment of bone which could not be identified as to part or species was recovered from grid unit L22, within the possible hearth feature.

Ceramic Artifacts

A single body sherd from a Glaze A olla was found in grid unit L24, and represents the only fragment of that vessel within the site location.

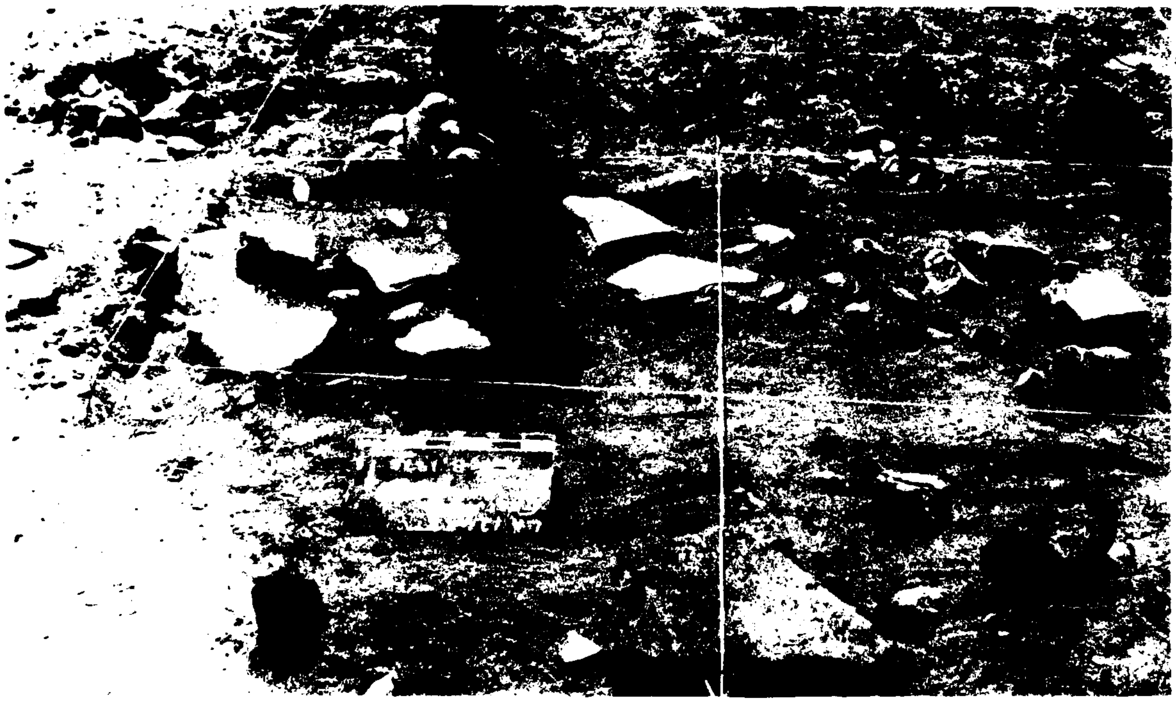

FIG. 9.39 LA 12463 - Feature 2

Lithic Artifacts

A total of 159 lithic artifacts was recovered from 50 of the 144 grid units comprising Provenience 2. Mean frequency of artifacts within grid units encompassing these artifacts was thus 3.18 artifacts per square meter, and 1.10 artifacts per square meter overall. The majority of these were debitage (83%) and small angular debris (9%). As monitored by weight, debitage and small angular debris were distributed in three distinct concentrations. One of these centered upon the hearth feature, with highest densities occurring directly northwest and southeast of the hearth itself. A second concentration was situated three meters east of the hearth feature (grid units K18, L17), and the third was situated two meters southwest of the feature (grid units J23, K24, L25). Both latter concentrations are essentially distributed as arcs facing inward toward the hearth itself.

A relatively low density scatter of debitage and small angular debris extends slightly southward from the hearth feature to encompass both exterior concentrations, and the grid units immediately adjacent the hearth on the east and west are devoid of artifactual remains. Two fragments of a slab metate, an unidentified mano fragment, fragments of two bifaces and a utilized core are situated adjacent to the hearth features as well.

The distribution of artifactual remains within Provenience 2 is thus quite intriguing, in that it is suggestive of a central hearth feature about which food preparation activities were undertaken, and three "discard" or trash areas: one in the vicinity of the hearth area itself, and two others situated two-three meters east and west of the hearth area, respectively.

1. Material Selection

Stone artifacts were manufactured p[illegible] dominantly from basalts (48%, 4 taxons), obsidians [illegible] 4 taxons), and chalcedonies (16%, 6 taxons). Te[illegible] [illegible]hert artifacts (2 taxons) and a single piece of jasperoid debitage were recovered as well. Although a total of 18 different material taxons are represented among the lithic artifacts, the majority of the obsidian artifacts are material 3530, and the majority of the basalts are material 3701. Waterworn cortical surfaces predominated among the cherts and chalcedonies, while relative similar frequencies of waterworn and nonwaterworn surfaces were exhibited among the obsidians and basalts.

2. Manufacture

Provenience 2 yielded a comparatively great number of cores (6), five of which were basalt and one of which was chert, and a single piece of chert large angular debris. The cores were distributed generally in the vicinity of the "discard" areas discussed above. A single hammerstone was found as well. Twenty-five percent of all debitage and small angular debris exhibited cortical surfaces. The greatest relative frequency of cortex was exhibited by chalcedony (35%), followed by basalt (26%), and obsidian (9%). Six of the eight pieces of chert debitage exhibited cortex as well.

A total of three resharpening flakes and two retouch flakes was encountered which were detached from at least two different obsidian bifaces. Two obsidian biface fragments were encountered, both of the same material as four of the retouch and resharpening flakes.

3. Tool Utilization

The presence of a single shallow basin metate and an undetermined mano fragment within the vicinity of the hearth area suggests that milling activities, presumably in the context of preparation of foodstuffs for consumption, were undertaken within the provenience locale. One basalt core which exhibited evidence of utilization in the form of battering was also situated within one meter of the hearth area, as were two utilized biface fragments.

A total of 18 pieces of debitage and small angular debris from Provenience 2 exhibited 25 utilized and/or retouched edges. Four of these artifacts were obsidian (4 edges), 12 were basalt (19 edges), one was chert (1 edge), and one was chalcedony (1 edge). All four obsidian artifacts and the single chalcedony artifact exhibited unidirectionally retouched edges, and of these five edges, only one of the obsidian edges exhibited evidence of usage (for scraping).

The remaining 20 edges exhibited considerable diversity in outline shape and wear pattern variability, suggesting a range of functionally specific usages. Six edges are concave in outline shape, and all exhibit polish. Unidirectional step fracture occurs on two of these edges, while the others exhibit a range of edge rounding from unidirectional and bidirectional to flat in cross-section.

Seven edges are straight in outline shape, and five of these exhibit either unidirectional perpendicular step fracture or flat cross-sections and polish indicative of their use in scraping activities. The remaining two edges are polished, bidirectionally rounded and exhibit microscarring indicative of sawing usage.

Of the four convex edges, three exhibit microscarring, edge rounding or striations indicative of sawing usage, and one exhibits bidirectional step fracture. Two of the concave-convex edges exhibit evidence of sawing usage, and one exhibits evidence of scraping usage.

In summary, edge utilization monitored for tools recovered from Provenience 2 suggests a relatively great diversity in specific functions undertaken, including both scraping and sawing activities. Unlike the tool use activities suggested from edges recovered from Provenience 1, which were restricted largely to scraping which resulted in no polish, a great percentage of both scraping and sawing usages evident among edges from Provenience 2 resulted in production of polish. This perhaps is indicative that the media being operated upon with tools in Provenience 2 were considerably different from those operated upon in Provenience 1.

PROVENIENCE 3

Features

Provenience 3 was ultimately defined as the eastern one-third of the site area. No obvious features such as intact or possibly eroded hearth areas were observed during excavation, but post excavation analysis of hearth element and firecracked rock distribution suggested that a possible hearth facility may have been located in the northeastern portion of the provenience. A relatively high density of firecracked quartzite cobbles and basalt

fragments was recovered from the surface of grid unit R3, and extended in diminishing quantity one meter west and up to four meters north. A very low density of hearth elements was recovered from grid units near the southern end of this firecracked rock distribution, and a moderately high density of debitage and small angular debris was apparent in a few grids noncontiguously distributed in an arc to the east through south, some 1m to 3m distant from the firecracked rock epicenter. Excavation in the vicinity of the firecracked rock distribution revealed no evidence of ash or charcoal.

Ceramic Artifacts

Although no ceramic fragments were recovered within the defined provenience locale, a single Galisteo B/W bowl sherd was found in grid unit A7. The sherd represents the only fragment of that vessel within the site location.

Lithic Artifacts

1. Material Selection

A total of 86 lithic artifacts was recovered from 64 of the 280 grid units comprising Provenience 3, thus exhibiting a mean frequency of 1.31 artifacts per square meter for those grid units encompassing artifacts, and 0.30 artifacts per square meter overall. The majority of these were debitage (88%) and small angular debris (7%). A single shallow basin metate, two cores and a biface fragment comprised the remainder of the artifact assemblage. Fifty percent of the artifacts were manufactured from basalt (2 taxons), followed by obsidian (26%, 4 taxons), chalceodny (19%, 4 taxons) and chert (6%, 3 taxons).

Although 13 different material taxons are represented, the vast majority of obsidian artifacts were manufactured from material 3530; basalt artifacts from 3701, and chalcedony artifacts from 1091. All material taxons are from source areas within the study area, and the cortex exhibited by slightly less than one-half of basalt artifacts exhibiting cortical surfaces was waterworn, which suggests it was gathered from cobble beach areas within the immediate vicinity of the site location.

2. Manufacture

Two cores, one basalt and one chalcedony, were recovered in the extreme southern part of Provenience 3. Both were situated in a portion of the provenience totally devoid of other artifactual debris. No hammerstones were found within the provenience.

Of the debitage and small angular debris recovered, 46% of the basalt exhibited cortex, as did 40% of the obsidian, and 13% of the chalcedony. Two of the four chert artifacts exhibited cortex as well. With the exception of three pieces of debitage which exhibited cortex on their platforms only, the remaining artifacts exhibited cortex on their dorsal surfaces.

Neither of the two cores exhibited cortical platforms.

3. Tool Utilization

A single shallow basin metate was found in grid unit Q3, directly adjacent to the northeastern firecracked rock concentration. No manos or other massive processing tools were encountered. Evidence of utilization of hafted tools was recovered as the proximal fragment of an obsidian biface, two resharpening flakes of the same material (3530), and a single retouch flake of 3524 obsidian. The biface fragment was found in grid unit K4, some seven meters south of the northeastern hearth area, and near the extreme southern edge of the artifact distribution within Provenience 3.

A total of 18 pieces of debitage or small angular debris exhibited utilized and/or retouched edges. Seven of these were obsidian, and the remaining 11 were basalt. Retouched edges exhibiting no evidence of utilization occurred on six of the seven obsidian artifacts. All of these edges were unidirectionally retouched, three to concave outlines, two to straight outlines, and one to a convex outline. The fact that wear patterns were not observed on these retouched edges does not necessarily imply that the artifacts were not employed as tools, given difficulties in distinguishing microfracture produced through usage from that produced solely through manufacture.

The remaining obsidian artifact exhibited an unretouched edge characterized by scraping usage which has resulted in unidirectional step fracture and a concave edge outline.

Ten of the basalt tools exhibited one utilized edge, and one exhibited two utilized edges. Two of these edges were unidirectionally retouched to straight, non-sinuous outline shapes.

Two of the basalt edges were concave, and both exhibited step fracture indicative of bidirectional scraping usage. Two edges were convex and both exhibited flat, polished cross-sections and no microscarring, indicative as well of scraping utilization. The single concave-convex edge was unidirectionally rounded and exhibited unidirectional step fracture and polish, again indicative of scraping utilization. Of the seven straight edges, five indicated utilization as scrapers, four in the form of unidirectional step fracture and a flat cross-section. Both remaining straight edges were bidirectionally rounded in cross-section and exhibited no microscarring, indicative of their use in sawing activities.

It is clear from wear patterns present among edges of artifacts recovered from Provenience 3 that the preponderance of activities for which lithic tools were employed were those involving scraping upon relatively resistant media. Scraping activities involving the usage of convex or concave-convex edges resulted in production of polish, while sc aping activities performed with concave and straight edges resulted in no polish. Only two artifacts were apparently used for sawing or cutting activities, and neither of these exhibited microscarring.

PROVENIENCE 4

Features

Provenience 4 was defined after excavation as the extreme western portion of the site area. No distinct hearth areas were recognized during the course of excavation, but post excavation analysis revealed a 5m x 5m area in the northern portion of the provenience which exhibited four localized, moderate concentrations of firecracked rock and a single localized distribution of debitage. The distributions of firecracked rock were centered upon grid units K28, K27, [illegible] respectively; and the debitage [illegible]

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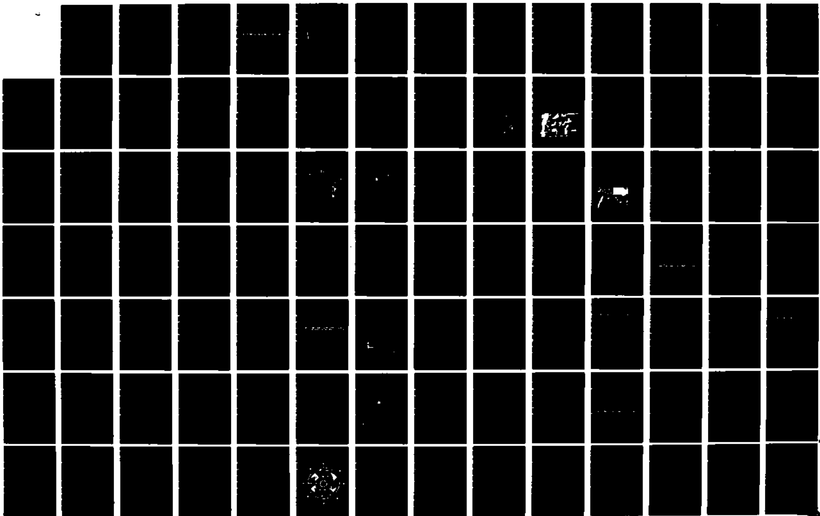

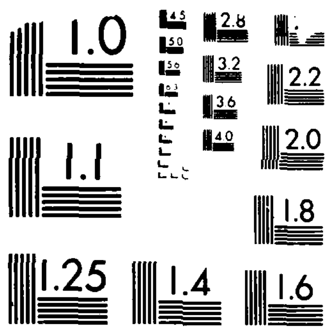

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ized within grid units L30 and M29. No hearth elements were recovered within the general area of these concentrations, and no evidence of charcoal or ash was found.

The distribution of firecracked rock within Provenience 4 is thus somewhat dissimilar from that encountered elsewhere upon the site location, in that no contiguous set of grid units encompassing firecracked rock can be defined as an "epicenter" of hearth usage activity. The distribution of firecracked rock and debitage rather suggests a series of possible discard loci situated more or less equidistant around the vicinity of grid units J28, J29, K28, and K29; but no physical evidence of a hearth feature within that location exists. It is thus entirely possible that the concentrations of firecracked rock and debitage within Provenience 4 may not represent discard areas deposited in conjunction with usage of a hearth feature in the immediate vicinity.

Ceramic Artifacts

No ceramic fragments were recovered from the provenience.

Lithic Artifacts

A total of 27 lithic artifacts was recovered from 16 of the 70 grid units comprising the provenience, and thus exhibited a mean frequency of 1.69 per square meter where recovered, and an overall mean frequency of 0.37 per square meter for the entire provenience. Debitage and small angular debris exhibited highest density in two adjacent grid units (K30, L29) as monitored by weight, and were distributed sparsely throughout the rest of the provenience. No lithic artifacts other than debitage (88%) and small angular debris (12%) were recovered.

1. Material Selection

The majority of the 27 artifacts was manufactured from basalt (56%, 1 taxon), followed by obsidian (26%, 4 taxons), and chalcedony (15%, 2 taxons). The remaining artifact was manufactured from jasperoid. A total of seven different material taxons were represented. All of the basalt artifacts were manufactured from 3701 materials, and the majority of cortical surfaces exhibited by basalts were waterworn, suggesting selection of these materials from source areas nearby the site location. The remaining material taxons are all available from source areas within the study area as well.

2. Manufacture

No cores, large angular debris or hammerstones were recovered, and no retouch or resharpening flakes are present within the assemblage. Cortical surfaces were exhibited by 68% of the obsidian artifacts, 50% of the chalcedonies, and 33% of the basalts. The single piece of jasperoid exhibited a cortical surface as well. Cortex was generally dorsal for all materials, although two pieces of obsidian and one piece of basalt debitage exhibited cortical platforms.

3. Tool Utilization

No milling implements, massive processing tools or hafted tools were recovered, nor was any evidence of their utilization. A total of five pieces of debitage exhibited utilized edges, and an additional two artifacts (one obsidian, one basalt) exhibited unidirectionally retouched edges with no observable wear. Two edges occurring on two obsidian tools were straight in outline shape and exhibited unidirectional step fracture indicative of scraping activities. One of these edges had been unidirectionally retouched, and the other was unretouched.

One basalt tool exhibited two unretouched edges characterized by evenly rounded cross-sections and polish, and another tool exhibited a single unretouched edge characterized by crescentic scars. All three of these edges were apparently used in sawing activities, and ranged in outline shape from straight to convex and concave-convex. The third basalt tool exhibited a single unretouched projection which had been used in a twisting, bore-like fashion.

TABLE 9.54

LA 12463—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS PROVENIENCE 1		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3523	–	–	1	–	–	–	–	–	–	–	–	1
	3524	1	–	–	–	–	–	–	–	–	–	–	1
	3530	8	–	–	–	–	–	–	–	–	–	–	8
Basalt:	3701	34	2	–	2	–	–	–	–	–	–	–	38
	3731	1	–	–	–	–	–	–	–	–	–	–	1
	3030	–	1	–	–	–	–	–	–	–	–	–	1
	3050	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1051	–	1	–	–	–	–	–	–	–	–	–	1
	1090	1	–	–	–	–	–	–	–	–	–	–	1

TABLE 9.34 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Chalcedony:	1053	5	–	–	–	–	–	–	–	–	–	–	5
	1213	1	–	–	–	–	–	–	–	–	–	–	1
	1215	2	–	–	–	–	–	–	–	–	–	–	2
	1091	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	1501	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		58	4	1	2	0	0	0	0	0	0	0	65
PROVENIENCE 2													
Obsidian:	3520	2	–	–	–	–	–	–	–	–	–	–	2
	3523	–	–	1	–	–	–	–	–	–	–	–	1
	3525	1	–	–	–	–	–	–	–	–	–	–	1
	3530	31	2	4	–	–	–	–	2	–	–	–	39
	3510	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3701	60	7	–	5	–	–	–	–	–	–	–	72
	3030	1	–	–	–	–	–	–	–	–	–	–	1
	3430	–	–	–	–	–	–	–	–	1	2	–	3
	3050	–	–	–	–	–	–	1	–	–	–	–	1
Chert:	1051	2	–	–	1	–	–	–	–	–	–	–	3
	1090	5	1	–	–	1	–	–	–	–	–	–	7
Chalcedony:	1052	3	–	–	–	–	–	–	–	–	–	–	3
	1053	2	–	–	–	–	–	–	–	–	–	–	2
	1091	6	–	–	–	–	–	–	–	–	–	–	6
	1214	1	1	–	–	–	–	–	–	–	–	–	2
	1215	10	1	–	–	–	–	–	–	–	–	–	11
	1340	–	2	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	1501	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		127	14	5	6	1	0	1	2	1	2	0	159
PROVENIENCE 3													
Obsidian:	3523	3	1	–	–	–	–	–	–	–	–	–	4
	3524	1	–	1	–	–	–	–	–	–	–	–	2
	3525	1	–	–	–	–	–	–	–	–	–	–	1
	3530	11	1	2	–	–	–	–	1	–	–	–	15
Basalt:	3701	36	4	–	1	–	–	–	–	–	–	–	41
	3430	1	–	–	–	–	–	–	–	–	1	–	2
Chert:	1050	3	–	–	–	–	–	–	–	–	–	–	3
	1051	1	–	–	–	–	–	–	–	–	–	–	1
	1090	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1053	3	–	–	–	–	–	–	–	–	–	–	3
	1091	9	–	–	–	–	–	–	–	–	–	–	9
	1214	1	–	–	–	–	–	–	–	–	–	–	1
	1215	2	–	–	1	–	–	–	–	–	–	–	3
Provenience Totals:		73	6	3	2	0	0	0	1	0	1	0	86
PROVENIENCE 4													
Obsidian:	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3524	1	–	–	–	–	–	–	–	–	–	–	1
	3530	3	–	–	–	–	–	–	–	–	–	–	3
	3550	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	13	2	–	–	–	–	–	–	–	–	–	15
Chalcedony:	1214	–	1	–	–	–	–	–	–	–	–	–	1
	1215	3	–	–	–	–	–	–	–	–	–	–	3
Quartzite, Jasp.:	1502	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		24	3	0	0	0	0	0	0	0	0	0	27

SUMMARY

LA 12463 is a site location characterized by evidence of hearth utilization and lithic artifact debris which may date to the Late Archaic, or Early Basketmaker phase of the Archaic Period. Assigning an absolute or relative date to the occupation of the site is difficult, in that no C-14 or obsidian hydration analysis was conducted. Only three ceramic fragments, representing three different vessels, were recovered from the site, and these were distributed in different provenience locales. No physical evidence exists to suggest that the ceramic fragments were deposited simultaneously with the firecracked rock and artifactual debris.

Procurement, Processing and Consumption

The structure of activity performance within the site location is clearly evident as two intensively utilized hearth areas in Proveniences 1 and 2 respectively, and two possible hearth areas reflecting less intensive utilization in Proveniences 3 and 4. No intact hearth features were recovered through excavation, but all hearth areas were characterized by varying densities of firecracked rock. The hearth areas in Proveniences 1 and 2 were defined in part by occurrences of larger slabs and clasts which may have once lined hearth features.

The only possible direct evidence of food resources which might have been processed for consumption in the vicinity of the hearth areas was a small bone fragment which could not be identified as to part or species, recovered from the hearth area in Provenience 2.

Indirect evidence that floral seed bearing species might have been procured and processed is indicated by the presence of milling implements within the near vicinity of the hearth in Provenience 2, and a metate situated adjacent to the possible hearth area in Provenience 3.

Evidence of biface utilization was recovered within Proveniences 2 and 3, and utilization of massive implements for chopping against resistant anvils is indicated in Proveniences 1 and 2. Utilized debitage from all assemblages were characterized by considerable diversity in edge outline shape, and wear patterns indicative largely of scraping activities upon media which resulted in the production of polish upon utilized edges.

The general distribution and content of artifactual assemblages within LA 12463 thus indicates a degree of similarity in activities performed at different locales. Variability in the density of both firecracked rock and artifactual debris between these locales might be explained as reflecting the number of episodes of occupation which has resulted in the assemblages.

LA 12465

During survey LA 12465 was documented as a nine provenience Historic(?) Period site location with a series of discrete masonry features distributed along the base of a cliff. These features included habitation, storage and corral-like structures. Only Provenience 4, an early Territorial structure, and portions of an area between Proveniences 3 and 4 were tested.

LA 12465 was located on the east side of the Rio Grande River in White Rock Canyon near the mouth of Drainage Basin No. 6, approximately one kilometer south of Bland Canyon. The site was situated on an aluvial fan at the base of a cliff approximately 30 meters from the river. It lay at an elevation of 5275 ft. Vegetation was dense near the the talus but became more sparse near the river. Species included tall junipers and hackberry trees intermixed with dense stands of cholla and sage. LA 12465 was located in the Juniper vegetative community.

A surface collection was made in the vicinity of Proveniences 3 and 4. Then Room 4, the single masonry structure in Provenience 4, was excavated. The interior fill was removed in two arbitrary levels which correspond to one natural stratum. A 1.0m x 1.0m test pit immediately south of the structure was excavated in one arbitrary level to bedrock.

Architecture

Room 1:

Shape: Sub-rectangular surface structure.

Orientation: The north wall of the structure was 49 degrees west of true north.

Condition: The structure was not eroded but the western wall was largely reduced.

Interior Room Dimensions:

	Length	Width	Height
North	cliff face	–	–
South	3.1m	.80m	1.1m
East	cliff face	–	–
West	1.4m	.40m	.20m to .90m

Walls: The room was constructed through abutting the west and south walls to the cliff face. Due to dissimilarity in construction, the two walls are described separately.

South Wall:

Type of Elements: Local basalt slabs and clasts.

Size of Elements: Average element size was 35cm x 35cm x 10cm.

Placement and Construction of Elements: The south wall was a rubble core wall. The inner and outer courses of the wall were constructed from elements laid horizontally and overlapping, with their long axis parallel to the long axis of the wall. The space between the two courses was filled with pieces of small rubble. All construction was dry laid.

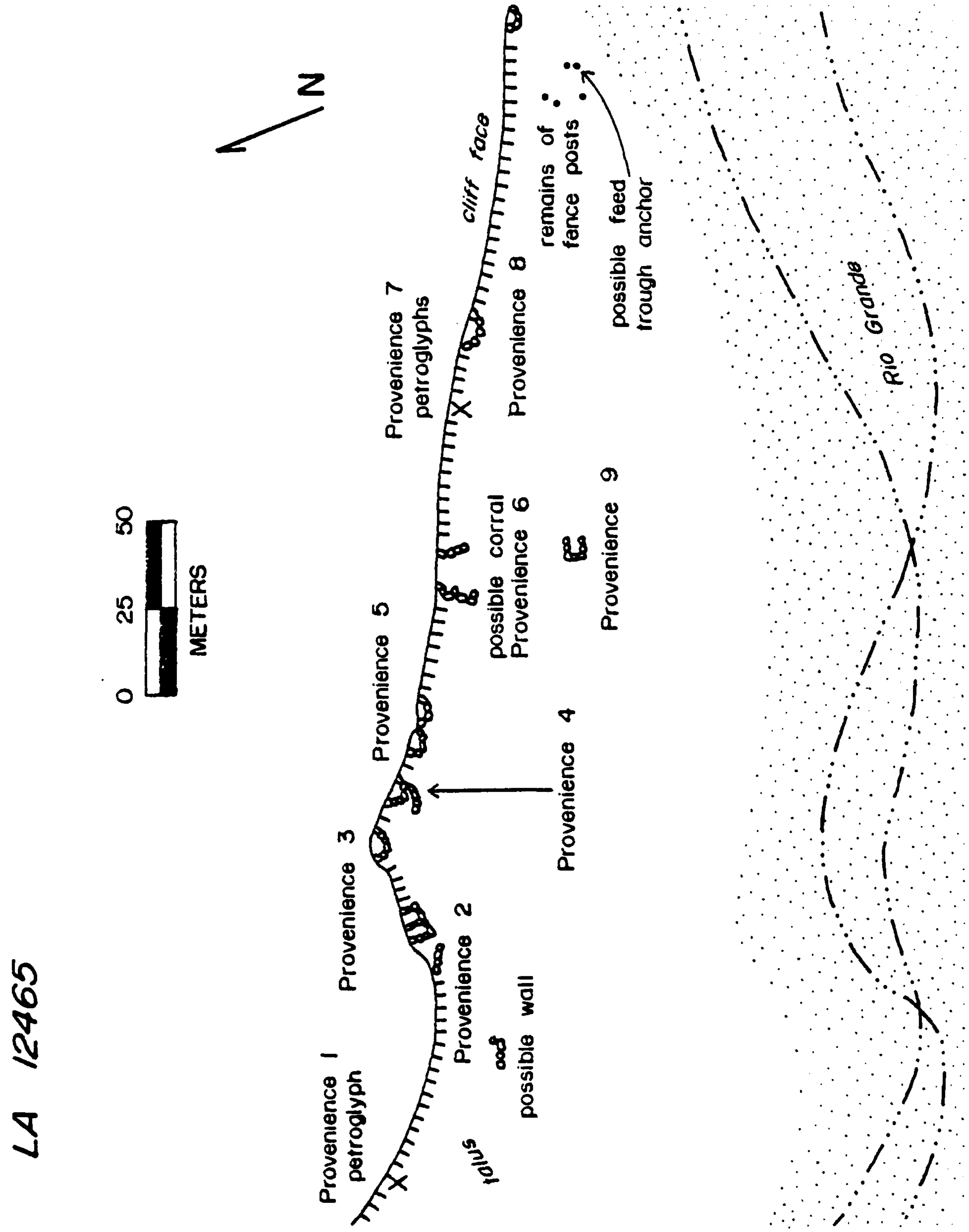


FIG. 9.40 LA 12465 Site Map

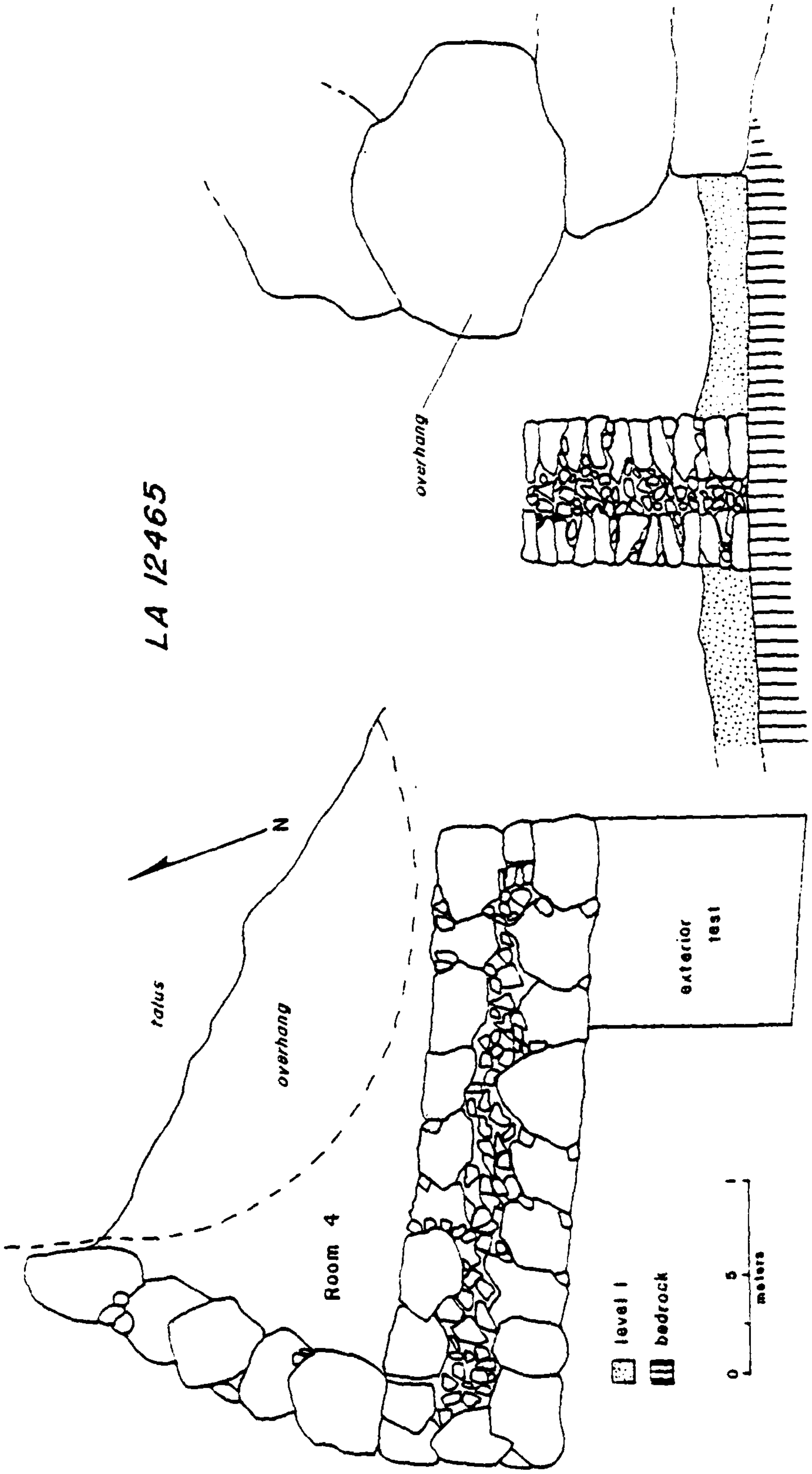


FIG. 9.41 LA 12465 Room 4, plan view and cross section

Shape of Elements: Unmodified.

Wall Facing: Elements were placed so flat surfaces faced both the interior and exterior of the structure.

Courses: The wall was two courses wide. Space between the courses was filled with rubble.

Chinking: Chinking consisted of small basalt elements and pebbles.

Corners: The west wall abutted the south wall in the southwest corner.

Plaster: No plaster was evident.

West Wall:

Type of Elements: Local basalt clasts.

Size of Elements: Elements were generally a bit larger (.40m x .40m) and more angular than those in the south wall.

Placement and Construction of Elements: The west wall was constructed from unevenly stacked elements. No mortar was employed in the wall construction.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: The west wall was a single element wide.

Chinking: Chinking was composed of basalt and small pebble elements.

Corners: The wall abutted both the cliff face to the north and the south wall.

Plaster: No plaster was evident.

Entrances: A floor level entranceway, 40cm wide, was formed between the cliff and the eastern end of the south wall. The wall elements facing the doorway formed a flat uniform surface, apparently terminating at the ground surface in a prepared step (basalt clast).

Floors: An apparent occupation layer was found at 20cm below surface inside the room. The layer differed from the upper fill only by relative hardness and occasional specks of charcoal. Erosion and rodent action have destroyed stratigraphic context and large portions of the assumed occupation level, making positive identification of the level as a floor difficult.

Roofing: The two walls were built against a cliff face. partial roof was formed by the cliff overhang. The overhang extended approximately 75cm.

Interior Features: No interior features were found.

Room Fill: The room fill was 20cm deep and was a relatively homogeneous mixture of light colored, powdery aeolian and colluvial deposits. A considerable amount of cholla in all stages of decomposition was intermixed throughout the fill. All fill was disturbed due to rodent action and erosion from cliff water drainage. Artifactual material was found in the first 10cm of fill. Materials recovered included lithics, bone, sherds and various historic items.

Rubble: Little wall rubble was recovered from the fill within or outside the room. The west wall was largely collapsed, and was estimated to have originally stood to a height of 1.0m.

Exterior Fill: A 1.0m x 1.0m test to bedrock was placed immediately south of the structure. The fill was approximately 20cm in depth, and similar in composition to the room fill. Exterior fill terminated at an uneven surface of reduced cliff elements. Artifactual material recovered from the exterior test included bone, lithics, sherds and several historic items.

Exterior Features:

Wall: An exterior wall originated at the southwest corner of the structure and ran northwest to abutt a portion of the talus. The wall appears to be part of a system of walls and boulders forming an enclosure 5m x 15m and associated with Provenience 2, 3 and 4. The wall is 5 meters in length. Construction could not be determined.

Artifactual Assemblages

Artifactual materials were recovered from three areas: the fill in Room 4; an exterior test pit outside the room, and a surface collection in the vicinity of Proveniences 3 and 4. Lithics, ceramics, metal, glass and bone were recovered from these areas.

Room 4, level 1

The fill in Room 4 extended to a depth of 20cm although cultural materials were only recovered from the upper 10cm. The fill was disturbed by rodent activity and erosion. Lithics, ceramics, faunal and metal materials were recovered from the room fill.

Ceramic Artifacts

Only five sherds representing a minimum of four vessels were recovered from the fill in Room 4. With the exception of one San Clemente(?) G-P bowl sherd, the remaining ceramics were historic wares. Tempering materials from these sherds suggested manufacture in the Southern Pajarito Plateau or Cochiti areas during the 18th or early 19th centuries.

Lithic Artifacts

Eight pieces of debitage were recovered from the fill in Room 4. Three were chert (2 taxons); four were chalcedony (2 taxons), and one had been manufactured from silicified wood. Four pieces had been selected for use. The utilized edges were diverse in outline shape and all exhibited either perpendicular or diagonal step fracture.

Bone Artifacts

No bone artifacts were recovered from the fill in Room 4.

Historic Artifacts

The historic artifacts recovered from Room 4 were metal items and included one Spencer Carbine Winchester cartridge, two metal buttons, one wire bent into a hook and a metal fragment.

Faunal Materials

Bone fragments from a minimum of four individuals were recovered from the fill in Room 4. These included one cow or bison; one Artiodactyla; one snake and one woodrat. Fragments from Artiodactyla and woodrat individuals were also recovered from the exterior test outside Room 4.

Exterior Test Pit, level 1

A 1.0m x 1.0m test to bedrock (20cm) was placed to the south of Room 4. The fill was similar to that in the room. Artifactual materials were recovered from the upper 10cm of the test pit.

Ceramic Artifacts

A total of 13 sherds from a minimum of seven vessels was recovered from the test pit. With the exception of three polished redware olla sherds, which were manufactured during the P-IV phase of the Anasazi Period, the remaining ceramics were historic 18th or 19th century wares. All of the historic vessels were either ollas or jars.

Lithic Artifacts

A total of 13 lithic artifacts was recovered from the test pit. Nine were pieces of debitage and four were pieces of small angular debris. Seven different material taxons were represented, including four taxons of chalcedony, three of obsidian, two of chert and one of basalt. Four artifacts exhibited use. Two of these artifacts exhibited multiple use edges (3 and 4 edges, respectively).

Bone Artifacts

No bone artifacts were recovered from the test.

TABLE 9.55

LA 12465—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 4, LEVEL 1													
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1215	2	–	–	–	–	–	–	–	–	–	–	2
Silicified Wood:	1112	1	–	–	–	–	–	–	–	–	–	–	1
Room Totals:		8	0	0	0	0	0	0	0	0	0	0	8
EXTERIOR TEST													
Obsidian:	3523	–	1	–	–	–	–	–	–	–	–	–	1
	3524	–	1	–	–	–	–	–	–	–	–	–	1
	3525	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1051	2	–	–	–	–	–	–	–	–	–	–	2
	1090	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1091	1	–	–	–	–	–	–	–	–	–	–	1
	1214	–	1	–	–	–	–	–	–	–	–	–	1
	1215	–	1	–	–	–	–	–	–	–	–	–	1
Totals:		9	4	0	0	0	0	0	0	0	0	0	13
SURFACE COLLECTION													
Basalt:	3701	9	–	1	–	–	–	–	–	–	–	–	10
Chalcedony:	1215	1	–	–	–	–	–	–	–	–	–	–	1
Totals:		10	0	1	0	0	0	0	0	0	0	0	11

Historic Artifacts

The largest number of glass and metal items found within the site location (17) was recovered from the test. The majority of items were buttons, both metal and glass. Fragments from an amber beer bottle and a crimped seam tin can indicated food activities. A spring, possibly from a flint lock rifle, was also recovered.

Fauna

Bones from a minimum of three individuals were recovered from the test pit. Included were fragments of a domestic sheep or goat or pronghorn individual, a woodrat and an immature Artiodactyla. Fragments from the latter two individuals were also recovered from the fill of the room.

TABLE 9.56

CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	TEMPER	FORM	Room 4	Prov. 3	Prov. 4	TOTAL
Prehistoric Wares						
San Clemente (?) G-P	latite (Gipuy)	bowl	1	–	–	1
Redware (polished)	hornblende latite	olla	–	–	1	1
	scoria	olla	–	–	1	1
Historic Wares						
Carbon polychrome	crystal pumice	olla	1	–	4	5
Carbon/white	crystal pumice	olla	–	–	1	1
Redware (polished)	crystal pumice	jar	–	–	3	3
Redware	crystal pumice	olla	1	1	–	2
	red scoria	olla	–	1	–	1
"red-brown" ware (highly polished)	vitric tuff	olla	–	1	–	1
Whiteware	sandstone	hemis. bowl	2	–	–	2
Plainware	sandstone	jar	–	–	2	2
Plainware (smudged interior)	sandstone	jar	–	–	1	1
TOTAL			5	3	13	21

Surface Collection between Proveniences 3 and 4

Eleven lithic artifacts and three sherds were recovered from the surface collection. The sherds represented three different historic redware ollas and probably dated to the 18th or 19th centuries. One was a highly polished sherd with a dark reddish-brown lusterous surface which is similar to brown stone ware. Its vitric tuff temper with brown shards is indicative that the vessel was manufactured in the Northern Rio Grande Valley.

Ten of the eleven lithic artifacts were manufactured from a single taxon of basalt (3701); the other lithic was manufactured from chalcedony (1215). With the exception of the piece of small angular debris, the remaining lithics were debitage. Four exhibited cortical surfaces. Two artifacts, one of which exhibited four edges, were utilized.

TABLE 9.57

LA 12465–HISTORIC MATERIALS

PROV.	ITEM	NO.	DATE
Room 4 level 1	Spencer Carbine Winchester cartridge	1	1866-1920 (see Barnes 1972)
	metal clothing buttons (4 holes)	2	unknown
	wire bent into hook	1	unknown
	metal frag.	1	unknown
Prov. 4 level 1	milk glass button (4 holes, white)	1	post 1860 (Fontana *et al.* 1962:98)
	metal clothing button	1	unknown
	copper domed clothing button (2 holes)	1	unknown
	metal rivet button	1	unknown
	probable spring from flint lock rifle	1	unknown
	cast iron frag.	2	unknown
	metal frag. (unid.)	1	unknown
	possible metal frag. from a crimped seam tin can	8	post 1900 (Fontana *et al.* 1962:67-78)
	beer bottle (amber) with opalescence	1	1873-1930's (Fontana *et al.* 1962:100)

SUMMARY

LA 12465 was one of two Territorial phase (A.D. 1848-1912) site locations tested during the excavation program in Cochiti Reservoir. Only one structure (Room 4) was excavated. Although a diversity of materials were recovered, including ceramic, lithics, fauna, metal and glass items, all occurred in relatively low frequencies. The majority of materials were recovered from a small 1.0m x 1.0m test outside the room itself.

The site was characterized by a series of small masonry room and possible corral structures constructed aganist the base of a sheer cliff face. The single room was small in size (4.3 sq. meters of floor space), and it exhibited no internal features such as hearths, cists or bins.

The context of occupation of Room 4 is difficult to posit through examination of the faunal and architectural assemblage. A minimum of six individuals are represented in the faunal assemblage, including cow or bison, sheep or goat or antelope, woodrat and snake. An additional unidentified Artiodactyla individual was represented as well.

Whether these specimens represent by-products of faunal consumption at LA 12465 could not be positively ascertained through analysis of butchering strategy

TABLE 9.58

MEAT PACKAGES AND LONG BONE SHAFT FRAGMENTS FOR MINIMUM NUMBER OF INDIVIDUALS

	MINIMUM NUMBER OF INDIVIDUALS	ELEMENTS REPRESENTED								LONG BONE SHAFT FRAGMENTS
		LOW MUSCLE MASS					HIGH MUSCLE MASS			
		Vertebrae	Pelvis	Skull	Mandible	Lower Leg	Ribs	Scapula	Upper Leg	
Bos spp./*Bison* spp.	1					1				
Ovis spp./*Capra* spp./ *Antilocapra* spp.	1				2					
Neotoma spp.	2					4		1	1	
Artiodactyla (immature)	1		1					2		
Crotalus spp.	1	1								
ADDITIONAL OVERLAPPING FAUNAL ELEMENTS										
Hyposodant Artiodactyla	1	1								
Medium-Large Mammal	1						1			
Medium Mammal	1									1
Small Mammal	1	1								

Number of identifiable bones: 17

Percent of long bone shaft fragments: 7%

because of the few number of specimens recovered. It can be presumed, however, that the presence of the larger mammals at the site was not due solely to natural causes. Remains of the two woodrats and the snake could be due to nonhuman agencies.

The only direct evidence of species procured and consumed at the site is represented by the faunal and milling implements or storage structures which may be indicative of processing or use of grains were not documented.

A total of nine ceramic vessels dating in manufacture to the 18th century were represented by 18 fragments. Vessel forms included jars (3), ollas (5) and a single bowl, and thus represent a range of cooking, serving and storage utilization. Fragments from a single crimped seam can and a beer bottle are the only industrially produced containers recovered.

The remainder of the historic aritfact assemblage included evidence of two kinds of firearms, a variety of buttons and metal clothing rivets. Tool utilization is represented only by lithic artifacts.

In general the tested portion of LA 12465 seems to represent a focal subsistence strategy based upon faunal procurement. The degree to which the site was inhabited on a seasonal, periodic basis, or constituted a more permanently inhabited homestead is difficult to ascertain given the limited architectural and artifactual inventory documented. The lack of any evidence indicating production, processing, storage or consumption of agricultural foodstuffs, however, may support the former suggestions.

It is clear from industrially produced artifactual debris that the inhabitants were engaged in at least limited interaction with an existing industrially based economic system. The nature of this articulation seems to have been restricted predominately to exchange for industrially produced clothing items rather than foodstuffs, or cooking utensils. In this respect, the occupation of LA 12465 differs considerably from the occupation of LA 12449, another relatively contemporaneous site location (ca. A.D. 1890-1905).

Precise dates bracketing the occupation of LA 12465 could not be posited through examination of either ceramic fragments of industrially produced items, but the term of that occupation may predate the occupation of LA 12449 by as much as 20 years. If this were so, the inhabitants of LA 12465 may not have had access to the widespread bulk circulation of industrially pro-

duced canned goods, utensils and implements facilitated by massive rail transportation systems constructed throughout the 1880's and 1890's in the New Mexico Territory.

If the site were inhabited during this period, the lack of such items at the site location indicates an extremely different level of articulation of the inhabitants with an industrial economic and transportation system than is reflected at LA 12449 and suggests that the impact of an industrial economy upon local group behavior in the project area was quite variable.

LA 12468

LA 12468 was a nonstructural site location which was characterized by the presence of two low density lithic scatters. It was located on the east side of the Rio Grande River at the mouth of Drainage Basin No. 3, approximately 2.5 kilometers north of the mouth of White Rock Canyon. The site was situated on an alluvial terrace 20 meters from the river on a large fanglomerate which was bounded on the east by steep cliffs and talus. LA 12468 was situated in the Juniper vegetative community which was characterized by dense clumps of juniper scattered across wide areas of grass and rabbitbrush. Several dense beds of prickly pear occurred periodically. The terrace was approximately two meters above the river and was eroding at the river edge.

Surface Indications

Survey data indicated the presence of two low density scatters of lithic artifacts separated by approximately 30 meters. An isolated obsidian projectile point was also recorded approximately 50 meters south of the two concentrations.

Mitigation Procedure

Due to the eroded condition of the site, little time was alotted for mitigation. Since LA 12468 was badly eroded, close horizontal control could not accurately record the spatial relationships between the lithic artifacts. Consequently, the sparse surficial material was collected by concentration rather than grid. The northern-most concentration was assigned Provenience 1,

TABLE 9.59

LA 12468—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Basalt:	3701	4	1	–	–	–	–	–	–	–	–	–	5
	3700	10	–	1	–	–	–	–	–	–	–	–	11
	3050	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1400	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1053	6	–	–	–	–	–	–	–	–	–	–	6
	1091	1	–	–	–	–	–	–	–	–	–	–	1
	1215	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		24	1	1	0	0	0	0	0	0	0	0	26
PROVENIENCE 2													
Obsidian:	3524	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	14	–	–	–	1	–	1	1	–	1	–	18
Chalcedony:	1053	–	1	–	–	–	–	–	–	–	–	–	1
	1214	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		16	1	0	0	1	0	1	1	0	1	0	21

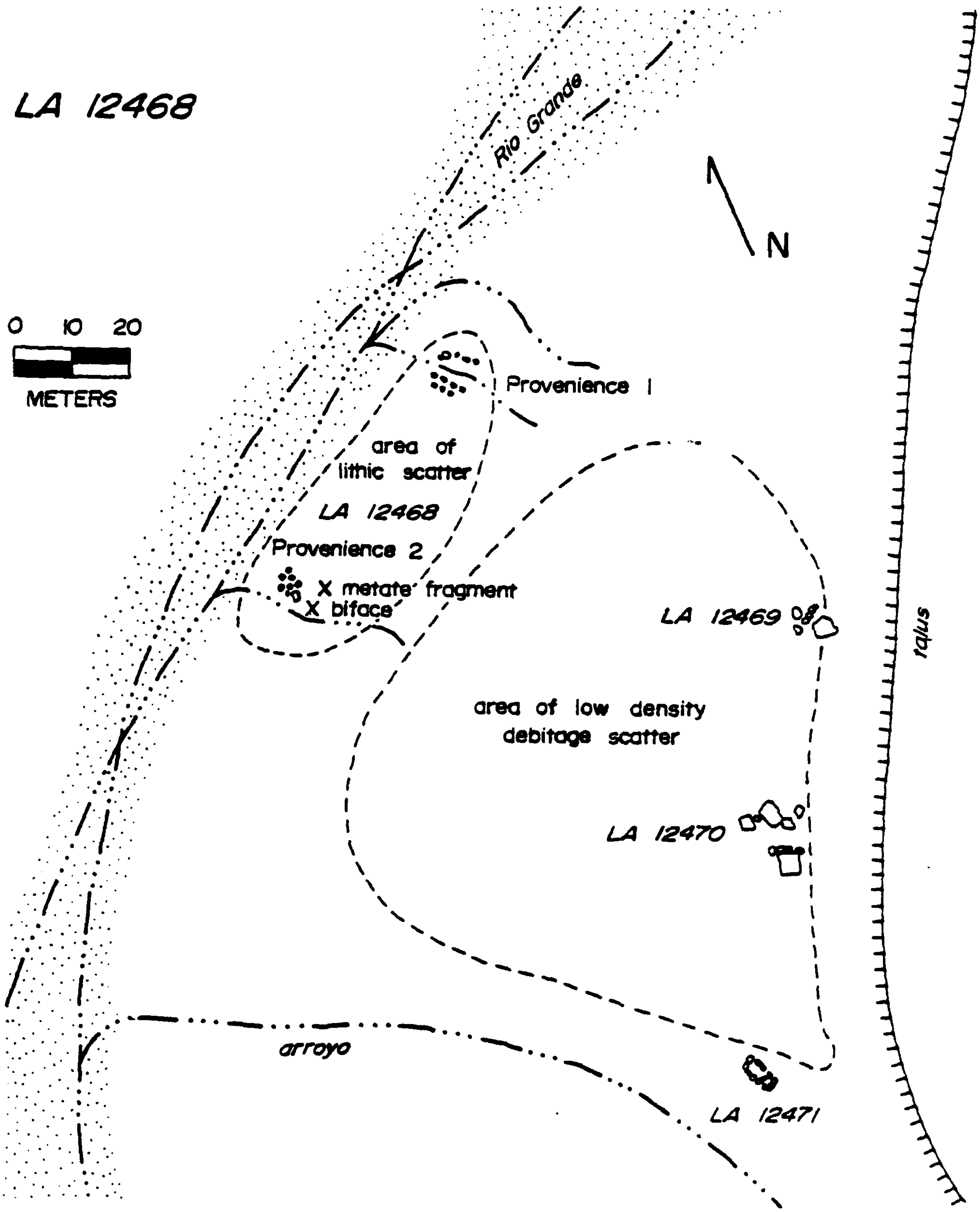


FIG. 9.42 LA 12468 Site Map

and the southern, Provenience 2. No subsurface tests were made. The mitigation consisted solely of a surface collection.

PROVENIENCE 1

Provenience 1 consisted of a concentration of lithics eroding out and down from the beach of the river. Most of the artifacts occurred within a 5m diameter concentration, although a few flakes were distributed further inland from the river. Some firecracked cobbles were present, but these were not counted or weighed during the surface collection. No intact hearths were evident.

Twenty-six lithic artifacts were recovered from Provenience 1. The majority were debitage (92%). Only one piece of small angular debris and one resharpening flake were recovered as well. During survey a slab metate and an unshaped mano were noted on the beach. Artifacts were manufactured from basalt (65%, 3 taxons), chalcedony (31%, 3 taxons) and chert (4%, 1 taxon). The frequencies of cortical and noncortical debitage are too low to suggest substantial amounts of reduction being conducted at the provenience locale, although one taxon of basalt (3700) may represent an exception. Only one of the basalt artifacts was selected for utilization. This edge was concave in outline shape and exhibited bidirectional rounding.

PROVENIENCE 2

Thirty meters south of Provenience 1 was a second concentration of lithic artifacts. This concentration, Provenience 2, was less dense than Provenience 1 and exhibited neither hearth elements nor firecracked rock. Artifactual debris was scattered over an area measuring approximately 5m in diameter.

Twenty-one lithic artifacts were recovered from the surface collection of Provenience 2. The majority were debitage (76.2%), although a variety of lithic artifacts were recovered. These included one hammerstone, one slab metate, one biface, one piece of large angular debris and one piece of small angular debris. Eighteen of these lithics were manufactured from a single taxon of basalt (3701). The remaining artifacts were manufactured from chalcedony (2 taxons, 2 artifacts) and obsidian (1 taxon, 1 artifact).

Only the basalt artifacts occurred in sufficient frequency to suggest manufacturing activities within the provenience locale. These artifacts exhibited low percentages of cortical surfaces and may represent secondary rather than primary reduction. Only the hammerstone and metate exhibited use.

LA 12483

Location and Physiographic Situation

LA 12483 is a nonstructural lithic and ceramic scatter located in White Rock Canyon on the west side of the Rio Grande river nearly one kilometer north of Bland Canyon. It lies approximately 150 meters north of Sanchez Canyon and 320 meters south of Medio Canyon. The site lies at an elevation of 5280 ft (1610m) near the southern end of a sand dune formation which extends northward to the mouth of Medio Canyon. LA 12483 is situated on the east face of a sloping sand dune, some 20 meters from the edge of the Rio Grande, and 70 meters east of the base of a steep basalt talus which rises to meet the sheer scarp, which comprises the western side of White Rock Canyon. A small easterly running arroyo, ca. 2 meters deep is directly south of the site.

The site is located in the Juniper vegetative community. Dominant vegetation of the sand dune formation surrounding the site location include junipers, rabbitbrush, and unidentified grasses. Junipers are distributed in clusters which have tended to stabilize dune formation processes, but small, relatively open expanses of unstabilized sand are situated between the stands of juniper.

Methodology of Excavation

From surficial indications, LA 12483 appeared to be a relatively localized low density scatter of ceramic fragments and lithic debitage, with possible evidence of hearth usage near its southern end suggested by fragments of firecracked basalt.

Artifactual debris was distributed more or less linearly from south to north across the face of the dune, over an area approximately 15m in length and 6m in width.

A 1.0m x 1.0m grid system was initially established to encompass the entire site area visible from the surface. The north-south baseline was oriented true north, roughly parallel to the strike of the dune slope and the long axis of the artifact distribution.

Two trenches 1.0m wide were then excavated near the southern and northern portions of the site, employing 10cm level control within each grid unit. The first of these trenches was oriented perpendicular to the strike of the dune slope, and was placed through the center of the firecracked rock distribution at the southern end of the site. The second trench was oriented parallel to the strike of the dune slope near the northern end of the site.

The test trenches revealed that the artifactual remains were largely surficial in distribution. Excavation of the remaining site area was then undertaken through stripping 10cm from the surface of each grid unit and screening the fill through ¼ inch hardware cloth.

Site Description

LA 12483 was documented during survey as a single provenience site. Upon completion of analysis, the site location was analytically stratified into three provenience units. Two of these units, Proveniences 1 and 2 were defined in part by relative density in weight of

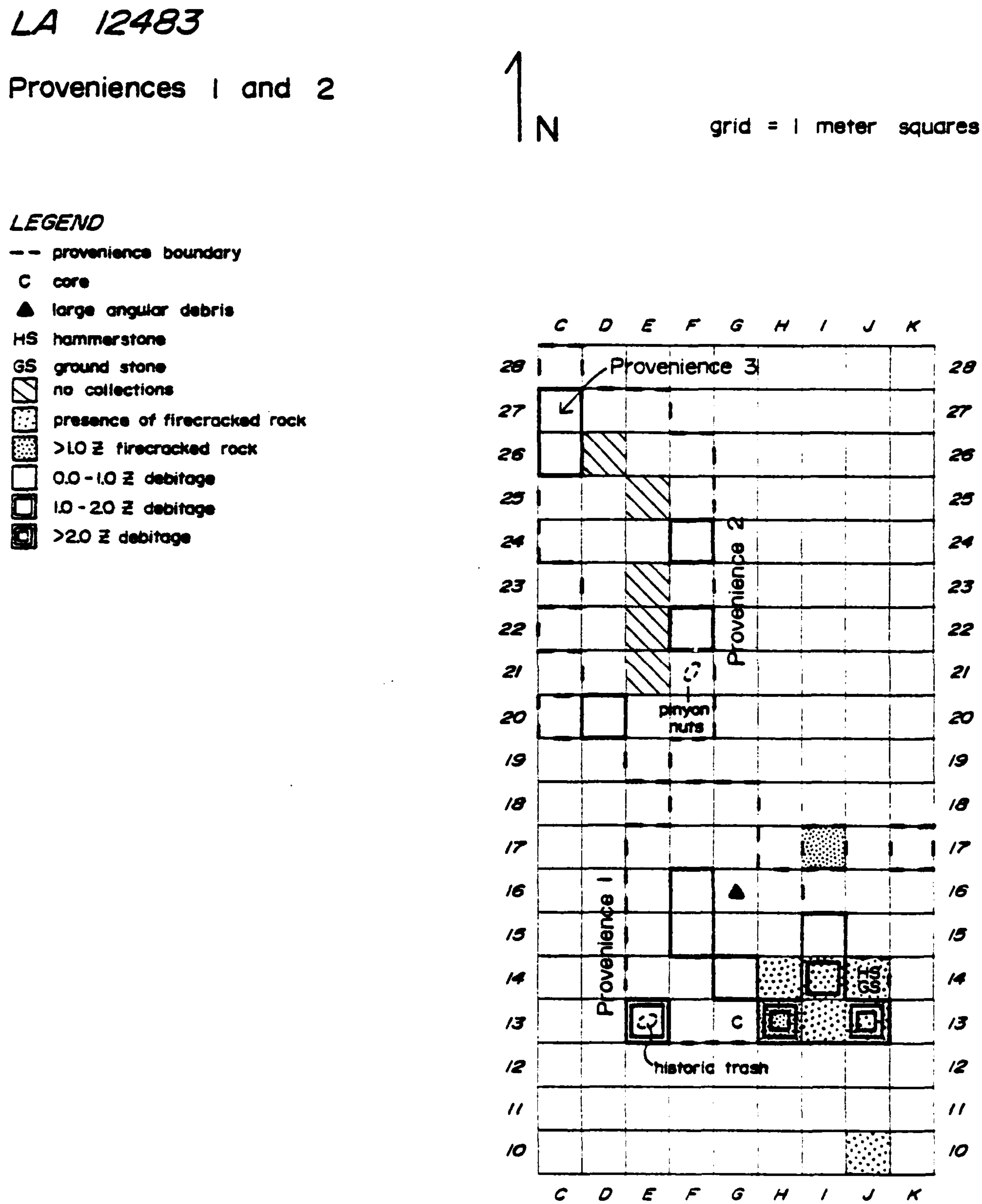


FIG. 9.43 LA 12483–Proveniences 1, 2 and 3

firecracked rock and lithic debitage recovered through stripping operations, and in greater part by the fact that the site was excavated as two ƨely noncontiguous blocks of 1.0m x 1.0m squares. Provenience 3 was represented by a small number of artifactual remains uncovered through subsurface excavations in the northern test trench (grid units C26, C27).

Based upon associated ceramic fragments, Proveniences 1, 2 and parts of Provenience 3 appear to have been deposited contemporaneously, and date to the early P-IV phase of the Anasazi Period. Evidence of a possible earlier episode of occupation was recovered through subsurface tests in Provenience 3.

PROVENIENCE 1

Features

Provenience 1 exhibited the only evidence of possible hearth usage at the site location. An oval lens of firecracked basalt fragments measuring 2.5m east-west by 1.5m north-south and extending from the existing surface to a maximum depth of 15cm was situated in the southern portion of the provenience. This lens was encompassed by six contiguous grid units. The firecracked basalt fragments ranged in maximum dimension from 5cm to 15cm.

No evidence of a hearth structure, ash or charcoal was found. Several ceramic fragments from a variety of vessels were intermixed throughout the firecracked basalt lens, as were several pieces of debitage. A snail shell fragment, which could not be identified as to species, and another small fragment of bone which could not be identified as to part or species were recovered within the

A presumably modern trash feature was encountered in grid unit E13, two meters west of the firecracked basalt concentration. Although no good definition of a pit itself could be ascertained, the feature consisted of a plastic Safeway produce bag which contained two Armed Forces issue ration cans, two plastic "baggie" type sandwich bags, and a single "zip-loc" type plastic bag. The feature was buried between 10cm and 20cm below the present surface of the site, and may have been deposited in conjunction with the occupation of LA 12484, a modern campsite located in the same dune area 20 meters north of LA 12483.

Ceramic Artifacts

Provenience I exhibited a total of 49 ceramic fragments recovered from 13 of the 27 grid units comprising the provenience. Ceramics occurred in greatest frequencies in those grid units exhibiting firecracked basalt and were intermixed throughout the firecracked basalt lens. Ceramic types positively associated with deposition of the firecracked basalt (i.e. in the lower portions of the lens) included Santa Fe B/W, Smeared Indented utility ware, Agua Fria G/R and unidentified G/Y. Including those sherds, ceramic fragments from Provenience 1 were representative of all types recovered from the site location with the exception of Cieneguilla G/Y and San Clemente G-P. Both bowl and olla vessels were represented for Glaze wares, while only bowl sherds were represented by Santa Fe B/W sherds. Utility wares were represented solely by jar sherds. No obvious patterning in the spatial distribution of ceramic types or vessel forms within Provenience 1 was apparent.

Lithic Artifacts

A total of 149 lithic artifacts was recovered from 25 of the 27 grid units comprising the provenience, resulting in a mean frequency of 5.96 artifacts for those grid units in which artifacts were recovered, and a mean frequency of 5.52 artifacts per square meter overall. The vast majority of these artifacts were pieces of debitage (78%) and small angular debris (20%). As monitored by weight, these artifacts occurred in greatest density within grid units encompassing the firecracked basalt lens.

1. Material Selection

Materials from which artifacts were manufactured were rather evenly represented by chalcedonies (34%, 6 taxons), basalts (32%, 5 taxons), and obsidians (23%, (4 taxons), with jasperoids (9 artifacts, 1 taxon), quartzites (4 artifacts, 2 taxons) and one chert artifact comprising the remainder. A total of 20 material taxons was represented. All of the lithic materials are from source areas within the study area.

2. Manufacture

Twenty-one percent of all debitage and small angular debris within the provenience exhibited cortical surfaces. A greater relative frequency of chalcedony materials exhibited cortex (33%) than did obsidians (18%), basalts (13%) or jasperoids and quartzites (9%). The vast majority of cortical surfaces exhibited by chalcedony and basalt were waterworn, whereas those exhibited by the other materials were not waterworn. A single hammerstone was recovered from grid unit J13. Other evidence of tool manufacture within the provenience included a single quartzite core and a single piece of basalt large angular debris.

3. Tool Utilization

None of the debitage or small angular debris within Provenience 1 were employed as tools, although three obsidian resharpening flakes suggested that a biface had been used. A single retouch flake of the same material (3530) may have been detached from that implement as well. The only other direct evidence of tool utilization is represented by a hammerstone, and a single piece of sandstone which exhibited grinding but could not be assigned to any particular ground stone taxon.

PROVENIENCE 2

Features

No features or evidence of firecracked rock were recovered through excavation of the provenience. A concentration of 12 roasted pinyon nuts was found between 0-10cm deep within grid unit F21. The time of deposition of these is uncertain.

Ceramic Artifacts

Provenience 2 exhibited a total of 16 ceramic fragments recovered from 13 of the 28 grid units comprising the provenience. Ceramic density ranged between one and two sherds per grid unit. All ceramic types recovered from the site location with the exception of Santa Fe B/W, unidentified G/Y and unidentified glaze red and white, were present. Glaze wares were represented by both bowl and olla fragments, while all utility ware

sherds represented jar fragments.

Lithic Artifacts

A total of 32 lithic artifacts was recovered from 20 of the 28 grid units comprising the provenience, resulting in a mean frequency of 1.60 artifacts per square meter for those grid units encompassing artifacts, and 1.14 artifacts per square meter overall. The majority of these were pieces of debitage (78%), and the remainder were small angular debris (22%). As monitored by weight, the density of artifacts across grid units was relatively uniform, with slightly higher density exhibited in grid units C27 and F22.

1. Material Selection

Materials from which artifacts were manufactured included basalts (41%, 2 taxons), obsidians (25%, 2 taxons) and chalcedonies (22%, 5 taxons). Two pieces of chert (2 taxons) and one each of silicified wood and quartzite were also represented among the total of 13 material taxons. All of the lithic materials are from source areas within the study area.

2. Manufacture

Thirty-eight percent of all artifacts exhibited cortical surfaces, with the greatest percentage exhibited by chalcedonies (57%) followed by obsidian (38%), and basalt (23%). Cortex exhibited by the chalcedony, chert and silicified wood artifacts was generally waterworn, while that exhibited by the basalt and obsidian artifacts was generally not. No cores, large angular debris or retouch flakes were recovered from the provenience.

3. Tool Utilization

Only two tools were recovered from Provenience 2, one of basalt and one of obsidian. Both tools exhibited a single utilized edge which had been unidirectionally retouched to a straight nonsinuous outline shape, and exhibited unidirectional step fractures situated perpendicular to the edge margin suggesting their usage in unidirectional scraping upon fairly resistant media.

PROVENIENCE 3

Features

Provenience 3 was arbitrarily defined as artifactual materials recovered through subsurface excavations (between 20-80cm below surface) in grid units C26 and C27. No features or evidence of firecracked rock were encountered through these excavations, although some of the few artifacts recovered were clearly situated among or below natural stratigraphic lenses which underlay the unconsolidated dune sands comprising the uppermost 10cm to 20cm of the entire site area.

Stratigraphy of test pits sunk in grid units C26 and C27 revealed an upper layer of dry, unconsolidated sand underlain by a layer of more moist sand of the same particle size, the top of which varied in depth between 24cm and 38cm below surface. Underlying this at a depth of 34cm to 40cm was a relatively even layer of silty clay ca. 4cm thick. Beneath the silty clay layer was another stratum of sand, which overlaid a second 2cm-4cm thick silty clay lens at a depth of ca. 70cm below the surface. The lower silty clay lens overlaid a 5cm to 15cm thick layer of coarse sand and gravel, which in turn was resting directly on another layer of sand of the same particle size as that comprising the upper unconsolidated dune sand.

If it can be assumed that the two layers of silty clay (at ca. 34cm to 40cm and 70cm below surface, respectively) were formed through downward percolation of smaller particles from an extant dune surface, then two episodes of dune formation are represented in the stratigraphy, the uppermost of which is still ongoing.

Ceramic Artifacts

A total of three ceramic fragments was recovered from subsurface excavations in grid unit C26. Two of these sherds, including an Agua Fria G/R olla fragment and one Smeared Indented Utility ware jar fragment, were recovered between 10cm and 40cm below the surface, but above the first silty clay lens, which suggests that they may have been deposited contemporaneously with the latest prehistoric occupation of the site. A single Smeared Indented Utility ware jar sherd was situated below the uppermost silty clay layer, suggesting the possibility that an earlier episode of cultural activity dating to the P-III or P-IV phase of the Anasazi Period may be present at the site location.

Lithic Artifacts

A total of five pieces of debitage representing two taxons of obsidian, and a single taxon of basalt, chalcedony and jasperoid respectively was recovered through subsurface excavations in the two grid units. All were recovered below the uppermost clay lens. None of the debitage exhibited cortical surfaces, and none exhibited any evidence of utilization as tools.

Faunal Remains

A small fragment of bone which could not be identified as to part or species was recovered from grid unit C26 directly above the uppermost clay lens.

SUMMARY

With the exception of five artifacts recovered from subsurface excavations within Provenience 3 and a modern campsite component, the occupation of LA 12483 can be attributed to the P-IV phase of the Anasazi Period.

Analytical approaches taken to isolate differential utilization of site space for performance of subsistence related activities resulted in no clearly defined, functionally specific activity areas with respect to tool manufacture, tool usage, or ceramic vessel fragmentation. No hearth features were recovered through excavation, but hearth utilization is evident in the form of a single localized lens of firecracked basalt near the southern end of the site in Provenience 1. The fact that grid units encompassing this firecracked basalt lens exhibited as well the highest relative density of both ceramic fragments and lithic debitage recovered through excavation of the entire site suggest that the feature represents a generalized discard area for material by-products generated from activities performed elsewhere upon the site location.

Examination of lithic artifacts has suggested that although direct evidence of initial stages of reduction are

TABLE 9.60

LA 12483 - PROVENIENCE 1
CERAMIC TYPE AND TEMPER VARIABILITY

GRIDS--Level 1

CERAMIC TYPE	TEMPER	FORM	E17	F13	F13†	F15	F16	G13	G13†	G16	H13	H13†	H15	I13	I14	I14†	I15	J13	J13†	J14	TOTAL
Santa Fe B/W	vitric tuff	bowl	—	—	—	1	—	2	—	—	—	—	—	—	—	—	—	—	—	—	3
	vitric tuff or pumice	bowl	—	—	—	—	—	—	2	—	—	1	—	—	—	—	—	—	—	1	4
Agua Fria G/R	scoria	bowl	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	2
		olla	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	2
	fine-grained basalt	bowl	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
	crushed sherd, basalt	olla	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—	2
Largo G/Y	augite latite	bowl	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	6	7
Unid. Red/white	misc. volcanic	bowl	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—		1
Unid. glaze/yellow	volcanic rock	bowl	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1
	fine-grained basalt	olla	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
Smeared Indented Corrugated	cyrstal pumice	jar	—	1	—	1	1	—	1	—	—	3	—	—	—	—	—	—	—	—	7
	vitrophyre	jar	—	—	—	—	—	—	—	—	3	1	—	3	1	—	—	—	2	—	10
Pajarito Corrugated	rhyolite tuff	jar	—	—	—	—	—	—	—	1	—	1	—	1	—	1	—	—	2	—	6
Plain Smeared	vitrophyre	jar	—	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	2
		Total	1	1	1	2	1	2	3	1	3	8	1	5	4	2	1	1	5	7	49

† level 2

TABLE 9.61

LA 12483–PROVENIENCES 2 and 3
CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	TEMPER	FORM	C22	C25	C26	C28	D21	D22	D23	D25	D27	E26	F22	F23	F26	C26, levels 2	5	6	TOTAL
Agua Fria G/R	scoria	bowl	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
	fine-grained basalt	bowl	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
		olla	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
	crushed sherd & basalt	olla	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	2
San Clemente G-P	scoria & sherd	bowl	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
Cieneguilla G/Y	augite latite	bowl	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
Smeared Indented Corrugated	crystal pumice	jar	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	2
	rhyolite tuff	jar	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2
	vitrophyre	jar	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	3
Pajarito Corrugated	rhyolite tuff	jar	–	–	2	–	–	1	–	–	–	–	–	–	–	–	–	–	3
Plain Smeared	vitrophyre	jar	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	2
		TOTAL	1	1	3	1	1	1	1	1	1	1	1	2	1	1	1	1	19

TABLE 9.62
LA 12483–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3520	5	–	–	–	–	–	–	–	–	–	–	5
	3523	10	–	–	–	–	–	–	–	–	–	–	10
	3525	3	–	–	–	–	–	–	–	–	–	–	3
	3530	10	3	4	–	–	–	–	–	–	–	–	17
Basalt:	3701	20	1	–	–	–	–	–	–	–	–	–	21
	3700	17	3	–	–	1	–	–	–	–	–	–	21
	3030	4	–	–	–	–	–	–	–	–	–	–	4
	3050	1	–	–	–	–	–	–	–	–	–	–	1
	3400	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	7	1	–	–	–	–	–	–	–	–	–	8
	1053	12	8	–	–	–	–	–	–	–	–	–	20
	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1215	8	6	–	–	–	–	–	–	–	–	–	14
	1310	1	1	–	–	–	–	–	–	–	–	–	2
	1340	2	3	–	–	–	–	–	–	–	–	–	5
Quartzite, Jasp.:	4000	–	–	–	1	1	–	–	–	–	–	–	2
	4001	2	–	–	–	–	–	–	–	–	–	–	2
	1501	5	4	–	–	–	–	–	–	–	–	–	9
Sandstone:	2020	–	–	–	–	–	–	–	–	1	–	–	1
Provenience Totals:		111	30	4	1	2	0	0	0	1	0	0	149
PROVENIENCE 2													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3530	7	–	–	–	–	–	–	–	–	–	–	7
Basalt:	3701	8	3	–	–	–	–	–	–	–	–	–	11
	3030	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
	1090	–	1	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1053	2	1	–	–	–	–	–	–	–	–	–	3
	1215	–	1	–	–	–	–	–	–	–	–	–	1
	1310	–	1	–	–	–	–	–	–	–	–	–	1
	1340	1	–	–	–	–	–	–	–	–	–	–	1
Silicified Wood:	1112	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		25	7	0	0	0	0	0	0	0	0	0	32
PROVENIENCE 3													
Obsidian:	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3530	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1310	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	1501	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		5	0	0	0	0	0	0	0	0	0	0	5

evident throughout all proveniences, no substantial manufacturing activities were undertaken at the site location. When compared to other site locations within the study area, the overall volume of reduction by-products is quite low when monitored by weight or frequency, despite the fact that the ratio of unutilized to utilized artifacts from the site location itself is comparatively high. Secondary stages of reduction, as monitored by debitage size, are largely absent.

Direct evidence of tool utilization is evident only through two retouched scrapers, resharpening flakes from an obsidian biface, a single hammerstone possibly employed for tool manufacture, and a piece of sandstone which exhibits evidence of grinding.

It can be suggested from the overall density and utilization of lithic artifactual remains that LA 12483 was the locus of very limited manufacture and utilization of lithic tools, and that neither the contexts of manufacture nor use of those tools necessitated considerable investment during any single occupational event.

With respect to the utilization of ceramic vessels, the site location exhibits fragments of 16 vessels which, with the exception of utility wares, are represented by one to seven sherds each. Three utility ware jars are represented by nine to 17 sherds each. Of the remaining 13 vessels, nine are bowls and four are ollas. This diversity in vessel form and rate of fragmentation suggests that occupation of the site location may well have been undertaken as a series of distinct events rather than a single event. It further suggests that a considerable range of activities involving ceramic vessel utilization were undertaken at the site location during more than one of those events.

LA 12486

Location and Physiographic Situation

LA 12486 is a P-IV phase Anasazi site characterized by at least three hearth areas and associated lithic and ceramic artifacts. The site is located on the west side of the Rio Grande River in White Rock Canyon, approximately 60 meters south of the mouth of Medio Canyon. LA 12486 is situated at an elevation of 5300 ft, 40 meters from the edge of the river. The site lies on the east slope of a sand dune, in an extensive area of dunes situated to the south of Medio Canyon.

LA 12486 is located in the Upper Sonoran Juniper vegetative community, and the vegetative structure in the vicinity of the site is an open Juniper woodland. Dominant species include juniper, rabbitbrush, and occasional snakeweed and grama grasses. Prickly pear cactus and star cactus occur infrequently as well.

Methodology of Excavation

LA 12486 was documented during survey as a single provenience characterized by a concentration of firecracked quartzite and basalt, basalt clasts indiciative of possible hearth facilities, and an associated scatter of lithic artifactual debris over an area measuring some 13 meters by 10 meters in extent. Four ceramic fragments were also observed within the site boundaries during survey.

Excavation was undertaken through initially imposing a 1.0m x 1.0m grid measuring 16m north-south by 12m east-west over the site area. All surficially observable material remains, including firecracked and nonfirecracked quartzite and basalt, lithic artifacts and ceramic fragments were then mapped.

Artifactual debris were then collected by hand from the surface of each 1.0m x 1.0m grid unit with the exception of several units situated in the south-central portion of the site area. These latter were mistakenly collected as five 2.0m x 2.0m units and a single 1.0m x 2.0m unit. These larger collection units were designated in the field as "proveniences" after the mistake was realized and include the following 1.0m x 1.0m units:

"Provenience" No.	1.0m x 1.0m Grid Units
P1	E2, F2
P2	E3, E4, F3, F4
P3	E5, E6, F5, F6
P4	E7, E8, F7, F8
P5	G3, G4, H3, H4
P6	G5, G6, H5, H6

It should be noted that these field "provenience" designations bear no relationship to the analytically defined proveniences described in this report. It should also be noted that only surficial artifactual remains were collected in the larger spatial units defined above. Subsurface excavation, as well as both surficial and subsurface weights of firecracked rock and hearth elements, were monitored by 1.0m x 1.0m grid units for the entire site location.

Preliminary field analysis of both artifactual debris and evidence of hearth utilization indicated three possible locations of hearth facilities in the vicinity of grid units E2, E9 and I10-11; and initial subsurface excavations were undertaken within those grid units employing 10cm vertical control. Additional subsurface tests were undertaken in grid units E14-16 to ascertain dune formation stratigraphy. Subsurface excavation was ultimately extended to encompass 28 of the 192 1.0m x 1.0m grid units comprising the grid system.

Results of subsurface excavation indicated that all material evidence of cultural activity within the site was distributed from the existing dune surface to a depth of between 13cm and ca. 25cm, within a layer of unconsolidated aeolian sand. A thin, undulating layer of silt and clay, which was intermixed in places with small pieces of gravel, underlay the unconsolidated sand, and with the exception of the immediate vicinity of hearth features, all artifactual remains. Beneath the silt and clay lens was another layer of unconsolidated aeolian sand which extended to a depth of at least 50cm below the existing surface. Tests were not taken below that level.

It can thus be suggested from stratigraphic evidence that the cultural deposition of material remains comprising the site occurred during the most recent stage of dune formation, but no absolute dates can be assigned to that stage from noncultural evidence.

SITE DESCRIPTION

LA 12486 was described during survey as a single provenience site location. Five provenience locales were ultimately defined after excavation and analysis and are illustrated on the accompanying site map. These provenience locales were defined largely through employing criteria of relative debitage weights exhibited by 1.0m x 1.0m grid units and the spatial location of hearth features and discard piles of firecracked rock.

Two problems in this distributional analysis were created as a function of recovery technique. Lithic artifacts from the site surface were collected in 1.0m x 1.0m grid units and six larger units. In order to make the debitage weights in these larger units comparable with weights exhibited by the 1.0m x 1.0m units, the total weight of debitage in each of the larger units was divided by the number of 1.0m x 1.0m grid units it encompassed and that mean weight value was then employed as an estimate of debitage density for the surface of each 1.0m x 1.0m grid encompassed by the larger unit.

Surficial firecracked rock was weighed by 1.0m x 1.0m grid unit across the entire site location and thus presented no problem.

The second analytical problem resided in the fact that 20 1.0m x 1.0m grid units were excavated to a depth of at least 20cm while the remainder were not excavated. In order to make relative density estimates of debitage and firecracked rock recovered from the excavated and unexcavated grid units more comparable, the excavated and unexcavated grids were defined as two independent populations, and z-scores of debitage and firecracked rock weights were generated for each population. For the population of excavated grid units, both surface and subsurface weight values were collapsed as a single density estimate for each grid unit.

The resultant z-score distributions have been illustrated on the accompanying site map as if all grid units comprised the same analytical population and determination of provenience locales was undertaken as if all grid units constituted the same population as well.

Actual mean weight for the 77 unexcavated grid units exhibiting firecracked rock was 2.2kg with a standard deviation of 2.7kg, and the mean weight for the 24 excavated grid units exhibiting firecracked rock was 8.1kg with a standard deviation of 6.0kg.

Actual mean weight for the 109 unexcavated grid units exhibiting debitage was 1.9g with a standard deviation of 3.9g, and the mean weight for the 26 excavated grid units exhibiting debitage was 9.8g with a standard deviation of 5.4g.

One unexcavated grid unit (B7) and one excavated unit (E2) exhibited debitage weights in excess of 1600g and were excluded from the populations for which z-scores were determined. Both grid units have been illustrated on the accompaying site map, however.

PROVENIENCE 1

Provenience 1 is located at the extreme southern extent of the site location and encompasses 36 square meters.

Features

Evidence of an eroded hearth facility (Feature 1), originally located in the vicinity of grid unit E2, was recovered as a 40cm diameter concentration of basalt clasts and slabs in that grid unit, and a scatter of similar larger elements downslope over an area 2m x 3m in extent. Details of the hearth construction could not be ascertained due to its state of erosion. A low density scatter of firecracked rock extended to the south of grid unit E2 as well, and occasional small flecks of charcoal were encountered in the vicinity of the hearth epicenter.

Possible evidence of resources processed and consumed in the vicinity of the hearth was recovered as a deer (*Odocoileus* spp.) radius fragment within the clast concentration (grid unit G2) which had been burned; another unburned Artiodactyla radius fragment from a different individual within grid unit D2, and additional burned and unburned bone fragments which could not be identified as to part or genera in grid units D2, F2 and H2.

Artifactual Assemblages

Ceramic Artifacts

Seven fragments from five different ceramic vessels were recovered within Provenience 1. Vessels represented included an unidentified G/Y olla (1 sherd), an unidentified G-P stirrup canteen (3 sherds), a Plain utility jar (1 sherd), a Blind Indented Corrugated jar (1 sherd) and a Plain Smudged utility jar (1 sherd). Fragments from all but the Blind Indented Corrugated jar were found in other provenience locales as well. All seven sherds were localized in distribution in the immediate vicinity of the hearth (Feature 1).

Lithic Artifacts

A total of 183 lithic artifacts was recovered from 23 of the 36 grid units comprising Provneience 1. The majarity was debitage (71%) or small angular debris (23%). Mean artifact frequency was 7.96 artifacts per square meter within grid units encompassing artifacts, and 5.08 artifacts per square meter overall.

Debitage and small angular debris, as monitored by weight, were distributed in greatest density throughout seven grid units extending from the hearth epicenter eastward over a distance of three meters. Cores and large angular debris were found at the eastern end of the debitage and small angular debris concentration.

1. Material Selection

Lithic artifacts were manufactured predominately from basalt (60%, 6 taxons), obsidian (15%, 6 taxons), chalcedony (8%, 5 taxons) and chert (6%, 4 taxons). The remaining lithic artifacts were manufactured from single taxons each of quartzite, jasperoid chert and metarhyolite. Cortical surfaces exhibited by basalt artifacts were generally waterworn, indicating their selection of basalt materials from beach areas along the Rio Grande nearby the site location. With the possible exception of

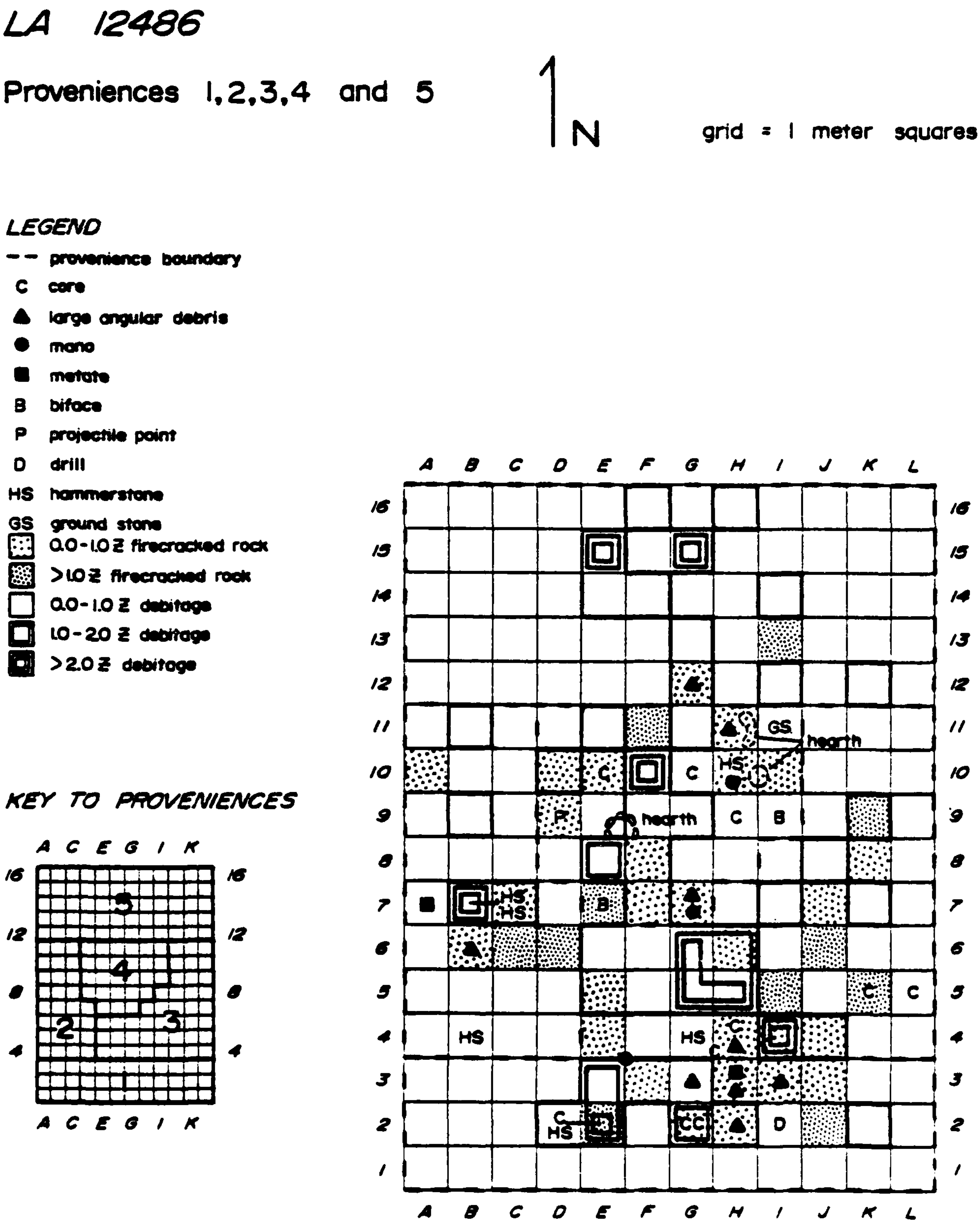


FIG. 9.44 LA 12486—Proveniences 1, 2, 3, 4 and 5

three artifacts, all other materials represented are available within the study area.

2. **Manufacture**

Three taxons of basalt and a single taxon of obsidian were characterized by numbers of debitage and small angular debris substantial enough to indicate at least minimal manufacturing activities within the provenience locale. Large by-products of reduction such as cores or pieces of large angular debris were present for two of the basalt taxons. Slightly over 40% of the basalt assemblage exhibited cortical surfaces, indicating that primary manufacturing was undertaken. Obsidian artifacts were predominantly noncortical, which may reflect secondary stages of manufacture rather than primary decortication. Platform variability among basalt debitage indicates that both unprepared cortical surfaces and single faceted noncortical surfaces were employed as striking platforms for debitage removal.

3. **Tool Utilization**

Milling activities are represented by a metate and a two-hand mano and other massive processing implements included a core exhibiting nonbattering utilization of two edges and a hammerstone. An obsidian drill constituted the only facially retouched artifact recovered, although resharpening flakes indicate possible usage of one basalt and two different obsidian bifaces. Two pieces of debitage and two pieces of small angular debris exhibited a total of six utilized edges. Despite the low number of tools, edge outline shape and wear pattern variability reflected a diverse set of utilizations including sawing or cutting and scraping upon both resistant and nonresistant media.

PROVENIENCE 2

Provenience 2 encompassed 28 contiguous grid units situated in the western portion of the site location.

Features

No direct evidence of hearth facilities was recovered within the provenience locale. A relatively dense concentr tion of firecracked rock was, however, located in grid units C6 and D6. This concentration may have been deposited as by-produces of usage of a hearth facility (Feature 2) situated some three meters northeast in Provenience 4. No evidence of charcoal, vegetative or faunal remains were recovered from Provenience 2.

Artifactual Assemblages

Ceramic Artifacts

Six fragments from four different ceramic vessels were recovered within Provenience 2. Vessels represented included an Agua Fria G/R olla (1 sherd), an unidentified G-P olla (1 sherd), an unidentified G-P stirrup canteen (3 sherds) and a Plain Smudged utility jar (1 sherd). Fragments from the latter three vessels were recovered from other provenience locales within the site location.

Lithic Artifacts

A total of 83 lithic artifacts was recovered from 25 of the 28 grid units comprising Provenience 2, the majority of which were debitage (76%) or small angular debris (16%). Mean artifact frequency was 2.32 artifacts per square meter within grid units encompassing artifacts

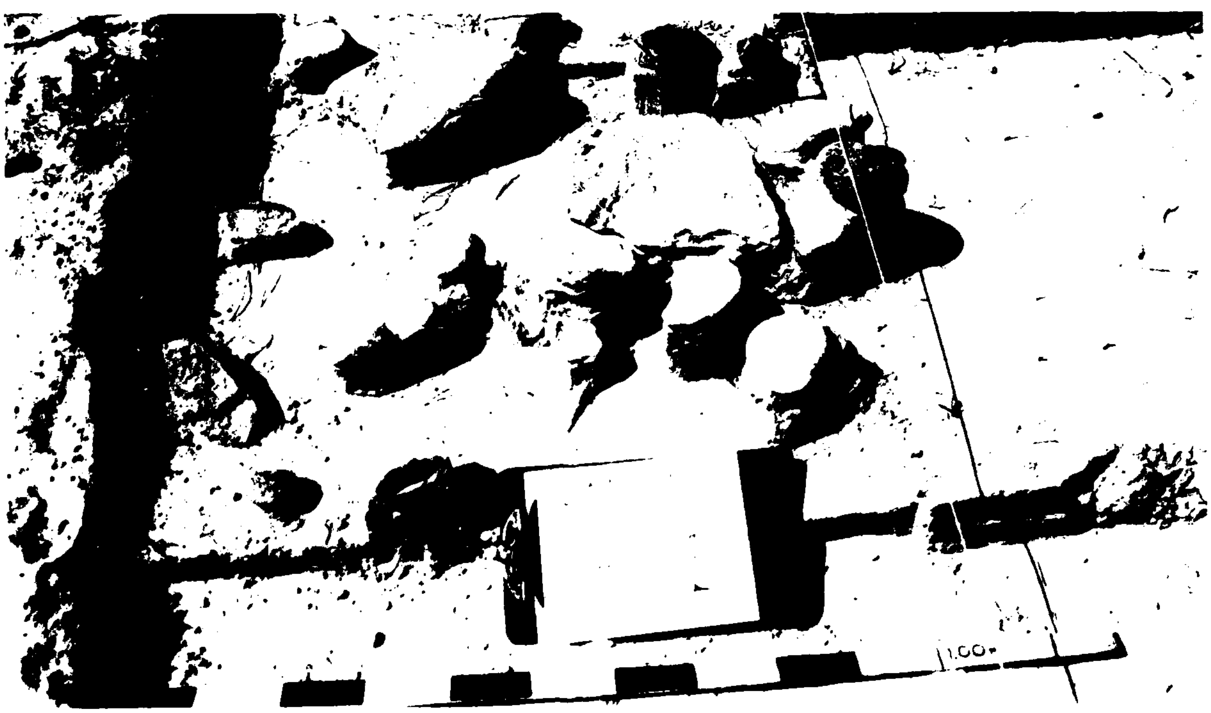


FIG. 9.45 LA 12486 Feature 1

and 2.96 artifacts per square meter overall. Debitage and small angular debris, as monitored by weight, were distributed in greatest density as a concentration in grid units B7 and C7, adjacent to the firecracked rock concentration. Two lower density concentrations encompassed by single noncontiguous grid units were apparent to the north of the larger concentration of debitage. Two of the three hammerstones recovered from Provenience 2 were found within the latter distribution.

1. Material Selection

Lithic artifacts were predominately manufactured from basalts (73%, 4 taxons), chalcedony (8%, 1 taxon) and obsidians (7%, 3 taxons). Other materials represented included quartzite (3 artifacts, 1 taxon), metarhyolite (3 artifacts, 1 taxon) and chert (3 artifacts, 3 taxons). Cortical surfaces exhibited by basalt artifacts were generally waterworn, indicating their selection from beach areas along the Rio Grande. All materials are available within the study area.

2. Manufacture

Two taxons of basalt are represented by numbers of debitage and small angular debris substantial enough to indicate their manufacture within the provenience locale. Larger by-products of reduction were generally lacking, although three hammerstones possibly employed for stone tool manufacture were recovered. Only 22% of the basalt artifacts exhibited cortical surfaces, and a relatively greater frequency of basalt debitage platforms indicates their detachment from previously retouched edges. The basalt assemblage thus seems to reflect secondary and tertiary stages of reduction rather than primary core decortication.

3. Tool Utilization

Limited evidence of tool utilization was recovered as a whole slab metate situated adjacent and west of the major debitage and firecracked rock concentration, three hammerstones and three pieces of debitage which exhibited a single utilized edge a piece. Two of the edges exhibited wear patterns indicative of unidirectional scraping, and the third was characterized by rounding, reflecting sawing utilization.

Resharpening flakes from at least one obsidian biface and two basalt bifaces indicate possible usage of three additional implements within the provenience locale as well.

PROVENIENCE 3

Provenience 3 encompassed 42 contiguous grid units situated in the central and eastern portion of the site location.

Features

Although no hearth facilities were defined within Provenience 3, a relatively dense concentration of firecracked quartzite cobbles and basalt was present in the vicinity of grid units I4, I5 and J4; and firecracked rock was scattered intermittently from that concentration to the north and east over an area some 15 square meters in extent. A single astragalus fragment from a small Artiodactyla was recovered from grid unit K5 and constituted the only possible direct evidence of food consumption within the provenience locale.

Artifactual Assemblages

Ceramic Artifacts

Seven fragments from four different ceramic vessels were recovered within the provenience locale. Vessels represented included an Agua Fria G/R olla (1 sherd), a Plain utility jar (4 sherds), and two different Blind Indented Corrugated jars (1 sherd each). The four Plain utility sherds were found in grid unit G4 and another sherd from that same vessel was recovered from Provenience 1. The remaining vessels there are represented only by fragments recovered within Provenience 3.

Lithic Artifacts

A total of 116 lithic artifacts was recovered from 25 angular debris (18%). Mean artifact frequency was 4.64 artifacts per square meter within those grid units encompassing artifacts and 2.76 artifacts per square meter artifacts per square meter within those grid units encompassing artifacts and 2.48 artifacts per square meter overall. As monitored by weight, debitage and small angular debris were distributed most densely throughout five grid units (G5, G6, H5, H6 and I4) in the southern portion of the provenience locale, adjacent and partially within the major firecracked rock concentration.

1. Material Selection

Lithic artifacts were predominately manufactured from basalts (54%, 5 taxons), cherts (12%, 4 taxons), obsidians (19%, 5 taxons), chalcedonies (16%, 3 taxons). Other materials represented included quartzite (4 artifacts, 1 taxon), jasperoid chert (3 artifacts, 1 taxon) and metarhyolite (9 artifacts, 1 taxon). Cortical surfaces exhibited by basalt artifacts were generally waterworn, indicating their selection of basalt cobbles from beach areas along the Rio Grande. All materials are available within the study area.

2. Manufacture

Only two taxons of basalt were represented by numbers of debitage or small angular debris substantial enough to indicate at least minimal manufacturing activities within the provenience locale. Although nearly 40% of those exhibited cortical surfaces indicative of primary stages of manfuacture, no larger by-products of reduction were recovered from a single taxon of chert and chalcedony, howeveer, although very little debitage was generated from those two taxons.

3. Tool Utilization

A single hammerstone and three pieces of debitage exhibiting a single utilized edge a piece constituted the entire tool inventory of Provenience 3. Two edges exhibited wear patterns indicative of unidirectional scraping, while the third had been employed for sawing upon relatively nonresistant materials. No resharpening flakes were present in the assemlbage.

PROVENIENCE 4

Provenience 4 encompassed 26 contiguous grid units situated in the center of the site lcoations.

Features

An intact hearth facility (Feature 2) was found in the

southeast corner of grid unit E9. The hearth was lined on the bottom with a single basalt slab and was encircled on its southern, eastern and northern perimeter by five vertically set basalt slabs. It was oval in outline shape, measured 50cm by 35cm in major and minor axes, and was between 9cm and 10cm deep. Fill consistted of charcoal. Charcoal stained sand extended outward some 30cm in all directions from the perimeter of the hearth.

An egg shell fragment recovered from grid unit E9 which was near the hearth, and a humerus fragment from a medium-sized rodent recovered from grid unit D9 to the west of the hearth, consistuted the only possible direct evidence of food resources consumed in the vicinity of the facility.

A second hearth area (Feature 4) was found in grid unit H11, four meters northeast of Feature 2. This hearth was not lined with slabs; rather, it consisted of a dense concentration of 34 burned quartzite cobbles distributed over an area 50cm to 60cm in diameter. Charcoal stained sand was present beneath portions of the cobble concentration. No direct evidence of foodstuffs prepared or consumed in the vicinity of the hearth was recovered.

Another concentration of burned quartzite cobbles (Feature 3) was located 40cm southeast of Feature 4. This concentration consisted of 18 quartzite cobbles and three basalt fragments which extended over an area 75cm in diameter and centered upon the boundary between grid units H10 and I10. No charcoal stain was observed in association with Feature 3.

It is possible that Feature 3 and Feature 4 represent discard piles of heat retainers employed through usage of a hearth facility such as Feature 2, although they are both situated at relatively great distance from the hearth. The charcoal stain underlying cobbles comprising Feature 4 may also indicate *in situ* heating of the elements.

Artifactual Assemblages

Ceramic Artifacts

Twelve fragments from six different ceramic vessels were recovered within Provenience 4. Vessels represented include an unidentified G/Y olla (2 sherds), three unidentified G-P vessles, including a bowl (3 sherds) an olla (3 sherds) and a stirrup canteen (2 sherds), a Santa Fe B/W bowl (1 sherd) and a Blind Indented Corrugated jar (1 sherds).

The G-P bowl, the Santa Fe B/W bowl and the corrugated jar are represented only by fragments recovere within Provenience 4, whereas fragments from the other three vessels were found in other proveniences within the site.

Lithic Artifacts

A total of 295 lithic artifacts was recovered from all 26 of the grid units comprising Provenience 4.. The majority were debitage (69%) or small angular debris (27%). Mean artifact frequency was 10.85 artifacts per square meter for the provenience overall. Debitage and small angular debris, as monitored by weight, was distributed in greatest density immediately south, east and north of the slab-lined hearth facility (Feature 2).

1. Material Selection

Lithic artifacts were predominately manufactured from basalts (66%, 5 taxons), chalcedonies (11%, 5 taxons), obsidians (10%, 5 taxons) and cherts (7%, 4 taxons). Other materials represented included single taxons each of quartzite (11 artifacts), metarhyolite (7 artifacts), jasperoid chert (2 artifacts), sandstone (2 artifacts) and rhyolite (1 artifact). Cortical surfaces exhibited by basalt artifacts were predominately waterworn, indicating selection of basalt materials from beach areas along the Rio Grande. All other materials are available within the study area.

2. Manufacture

Two taxons of basalt (3701, 3050) were characterized by substantial numbers of debitage and small angular debris, although few larger by-products of reduction were recovered. An additional taxon of chalcedony (1215) and chert (1051) were represented by numbers of debitage and small angular debris indicating at least minimal reduction within the provenience locale. Slightly less than 30% of the basalt artifacts exhibited cortical surfaces, indicating a greater investment into secondary stages of manufacture than apparent with respect to the chert and chalcedony taxons. Reduction techniques involved freehand percussion for all materials. Both cortical and noncortical single facet surfaces were employed as striking platforms for basalt and chalcedony reduction, chert reduction seems to have been restricted to debitage detachment from noncortical platform surfaces.

3. Tool Utilization

Provenience 4 exhibited by far the greatest number of tools recovered from all provenience locales within the site location. Milling activities were represented by two one-hand manos and a piece of basalt exhibiting ground surfaces which could not be assigned to a formal categgory. Other more massive implements included the bit end of a laterally notched rhyolite ax, a hammerstone and fragments of a sandstone shaft straightener. Facially retouched artifacts recovered included a whole ovoid biface manufactured from basalt, the distal fragment of a chalcedony biface, and a proximal fragment from an obsidian projectile point which had exhibited side notches and a flared stem. Resharpening flakes indicated possible utilization of an additional basalt biface and an additional obsidian biface as well.

A total of ten pieces of debitage and one piece of small angular debris exhibited 13 utilized edges. These tools were manfactured from obsidian (5 artifacts, 7 edges), basalt (5 artifacts, 5 edges) and chalcedony (1 artifact, 1 edge). Eight edges were characterized by unidirectional step fracture indicating scraping utilization upon relatively resistant media. Of the remaining five edges, three had been employed in sawing tasks which resulted only in nibbling of the edge margins, and two had been used for tasks which resulted in bidirectional rounding and unidirectional rounding of the edge margin. Edge shapes were straight (7 edges), convex (3 edges), concave-convex (2 edges) or concave (1 edge). Edge angles were in general steep rather than acute. Five edges had been unidirectionally retouched and one had been bidirectionally retouched prior to usage.

PROVENIENCE 5

Provenience 5 encompassed 60 contiguous grid units

TABLE 9.63

LA 12486 - CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE, TEMPER		PROV. 1					PROV. 2					PROV. 3			PROV. 4								PROV. 5	
		D2, LEVEL 1	F1, LEVEL 0	F2, LEVEL 1	G2, LEVEL 1	P2, LEVEL 1	A10, LEVEL 0	A11, LEVEL 0	B5, LEVEL 0	D7, LEVEL 1		G4, LEVEL 1	I4, LEVEL 0	L6, LEVEL 0	D10, LEVEL 0	D11, LEVEL 0	E9, LEVEL 1	F8, LEVEL 1	F9, LEVEL 1	H10, LEVEL 1	I10, LEVEL 1	P4, LEVEL 0	B12, LEVEL 0	TOTAL
Agua Fria (?) G/R hornblende latite	olla	–	–	–	–	–	–	–	–	–	–	–	1†	–	–	–	–	–	–	–	–	–	–	1
andesite tuff	olla	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Unidentified G/Y (Glaze A or B) scoria	olla	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	3
Unidentified G-P hornblende latite	bowl	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	–	–	3
hornblende latite	olla	–	–	–	–	–	–	–	–	–	1	–	–	–	1	1	1	–	–	–	–	–	1	5
hornblende latite	stirrup canteen	1	1	–	1	–	–	1	–	1	1	–	–	–	–	–	2	–	–	–	–	–	–	8
Santa Fe B/W sherd	bowl	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Plain Utility granite-mica?	jar	–	–	–	–	1	–	–	–	–	–	4	–	–	–	–	–	–	–	–	–	–	–	5
Blind Indented Corrugated rhyolite tuff	jar	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
crystal pumice	jar	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
vitrophyre	jar	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Smeared Indented Corrugated rhyolite tuff	jar	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
Plain Smudged Utility andesite-vitrophyre	jar	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
TOTAL		3	1	1	1	1	1	1	1	1	2	5	1	1	1	1	3	1	3	1	1	1	1	33

† worked sherd

situated in the northern portion of the site location.

Features

No hearth facilities were found within the provenience locale and only two grid units exhibited relatively dense concentrations of firecracked rock. A total of four grams of unburned bone fragments which could not be identified as to part or species was recovered from grid unit E15.

Artifactual Assemblages

Ceramic Artifacts

A single fragment from an unidentified glaze-polychrome olla was recovered from grid unit B12. Fragments from the same vessel were recovered from two other provenience locales within the site location.

Lithic Artifacts

A total of 159 lithic artifacts was recovered from 40 of the 60 grid units comprising Provenience 5, nearly all of which were pieces of debitage (65%) or small angular debris (35%). The only larger artifact encountered was a piece of large angular debris. Mean artifact frequency was 3.93 artifacts per square meter within grid units encompassing artifacts and 2.62 per square meter for the provenience overall. Debitage and small angular debris, as monitored by weight were distributed in greatest density within two grid units in the north-central portion of the provenience locale.

1. Material Selection

Lithic artifacts were manufactured predominately from basalts (56%, 4 taxons), chalcedonies (22%, 7 taxons), metarhyolite (8%, 1 taxon) and obsidians (6%, 4 taxons). Other materials represented include cherts (8 artifacts, 3 taxons), and single taxons each of jasperoid chert (4 artifacts) and quartzite (2 artifacts). The majority of surfaces exhibited by basalt artifacts were waterworn, indicating the selection of basalt materials from beach areas along the Rio Grande. With the exception of a single artifacts manufactured from Mt. Taylor obsidian (3510), all materials are available within the study area.

2. Manufacture

Four taxons of material (3701, 3050, 1215 and 1502) are represented by numbers of debitage and small angular debris substantial enough to indicate their manufacture within the provenience locale, although only one larger by-product of reduction for one of the basalt taxons was recovered. Despite this, relative frequencies of debitage and small angular debris exhibiting cortical surfaces was generally high (40% to 46%), indicating that primary stages of manufacture were undertaken. A greater percentage of cortical surfaces was exhibited by angular debris within Provenience 5 than within assemblages recovered from other porvenience locales at the site location. Little evidence for tertiary stages of debitage reduction from marginally or facially retouched artifacts was evident, and reduction technique appears to have involved freehand percussion from both cortical and noncortical single facet striking platforms.

3. Tool Utilization

The only tool recovered from Provenience 5 was a piece of basalt debitage which exhibited a single unretouched utilized edge characterized by unidirectional step fracture and bidirectional rounding. Three resharpening flakes from three different obsidian bifaces were recovered as well, which may indicate their utilization within the provenience locale.

TABLE 9.64

LA 12486—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3520	14	1	2	–	–	–	–	1	–	–	–	18
	3523	2	–	1	–	–	–	–	–	–	–	–	3
	3524	1	–	–	–	–	–	–	–	–	–	–	1
	3525	3	–	–	–	–	–	–	–	–	–	–	3
	3530	1	1	–	–	–	–	–	–	–	–	–	2
	3510	–	1	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	37	11	1	–	2	–	–	–	–	–	–	51
	3700	3	2	–	–	–	–	–	–	–	–	–	5
	3730		1	–	–	1	–	–	–	–	–	–	2
	3050	30	5	–	3	–	–	–	–	–	–	–	38
	3431	–	–	–	–	–	–	–	–	1	–	–	1
	3030	7	4	–	–	–	–	–	–	–	–	–	11
Chert:	1050	2	–	–	–	–	–	–	–	–	–	–	2
	1051	1	–	–	–	–	–	–	–	–	–	–	1
	1090	1	1	–	–	–	–	–	–	–	–	–	2
	1400	5	–	–	–	–	–	–	–	–	–	–	5

TABLE 9.64 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Chalcedony:	1052	–	1	–	–	–	–	–	–	–	–	–	1
	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	1	1	–	–	–	–	–	–	–	–	–	2
	1214	3	1	–	–	–	–	–	–	–	–	–	4
	1215	5	2	–	–	1	–	–	–	–	–	–	7
Quartzite,Jasp.:	4000	2	6	–	–	–	–	1	–	–	–	–	9
	1501	2	–	–	–	–	–	–	–	–	–	–	2
	1502	5	3	–	–	1	–	–	–	–	–	–	9
Other:	9999	–	–	–	–	–	–	–	–	–	1	–	1
Provenience Totals:		126	41	4	4	4	0	1	1	1	1	0	183
PROVENIENCE 2													
Obsidian:	3520	2	1	1	–	–	–	–	–	–	–	–	4
	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3525	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	22	7	3	–	1	–	–	–	–	–	–	33
	3700	–	1	–	–	–	–	–	–	–	–	–	1
	3050	22	3	1	–	–	–	–	–	–	–	–	26
	3430	–	–	–	–	–	–	–	–	–	1	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1073	1	–	–	–	–	–	–	–	–	–	–	1
	1400	–	1	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1215	7	–	–	–	–	–	–	–	–	–	–	7
Quartzite, Jasp.:	4000	–	–	–	–	–	–	3	–	–	–	–	3
	1502	3	–	–	–	–	–	–	–	–	–	–	3
Provenience Totals:		60	13	5	0	1	0	3	0	0	1	0	83
PROVENIENCE 3													
Obsidian:	3520	4	–	–	–	–	–	–	–	–	–	–	4
	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3524	1	–	–	–	–	–	–	–	–	–	–	1
	3525	2	1	–	–	–	–	–	–	–	–	–	3
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	27	5	–	–	–	–	–	–	–	–	–	32
	3700	3	–	–	–	–	–	–	–	–	–	–	3
	3030	2	5	–	–	1	–	–	–	–	–	–	8
	3050	17	2	–	–	–	–	–	–	–	–	–	19
	3730	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	2	1	–	–	–	–	–	–	–	–	–	3
	1090	2	–	–	–	–	–	–	–	–	–	–	2
	1400	3	3	–	2	–	–	–	–	–	–	–	8
Chalcedony:	1053	3	1	–	–	–	–	–	–	–	–	–	4
	1214	1	2	–	–	–	–	–	–	–	–	–	3
	1215	4	–	–	1	–	–	–	–	–	–	–	5
Quartzite, Jasp.:	4000	3	1	–	–	–	–	–	–	–	–	–	4
	1501	3	–	–	–	–	–	–	–	–	–	–	3
	1502	8	–	–	–	–	–	1	–	–	–	–	9
Provenience Totals:		90	21	0	3	1	0	1	0	0	0	0	116

TABLE 9.64 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 4													
Obsidian:	3520	6	1	–	–	–	–	–	1	–	–	–	8
	3523	5	–	–	–	–	–	–	–	–	–	–	5
	3524	4	1	1	–	–	–	–	–	–	–	–	6
	3525	4	2	–	–	–	–	–	–	–	–	–	6
	3530	4	–	–	–	–	–	–	–	–	–	–	4
Basalt:	3701	64	32	5	1	–	–	–	–	–	–	–	102
	3700	4	3	–	–	–	–	–	–	–	–	–	7
	3030	5	–	–	–	–	–	–	–	–	–	–	5
	3050	56	18	–	–	1	–	–	1	–	–	–	76
	3401	–	–	–	–	–	–	–	–	–	–	1	1
Chert:	1051	10	2	–	1	–	–	–	–	–	–	–	13
	1070	1	–	–	–	–	–	–	–	–	–	–	1
	1090	3	1	–	–	–	–	–	–	–	–	–	4
	1400	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1053	4	1	–	–	–	–	–	–	–	–	–	5
	1091	4	3	–	–	–	–	–	1	–	–	–	8
	1214	–	1	1	–	–	–	–	–	–	–	–	2
	1215	10	5	–	–	–	–	–	–	–	–	–	15
	1340	–	–	–	–	1	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	4	5	–	–	–	–	1	–	1	–	–	11
	1501	2	–	–	–	–	–	–	–	–	–	–	2
	1502	4	3	–	1	–	–	–	–	–	–	–	8
Sandstone:	2300	–	–	–	–	–	–	–	–	1	–	1	2
Other:	3150	–	–	–	–	–	–	–	–	–	–	1	1
Provenience Totals:		196	78	7	3	2	0	1	3	2	0	3	295
PROVENIENCE 5													
Obsidian:	3520	1	1	1	–	–	–	–	–	–	–	–	3
	3523	2	–	1	–	–	–	–	–	–	–	–	3
	3525	1	–	1	–	–	–	–	–	–	–	–	2
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	20	14	2	–	1	–	–	–	–	–	–	37
	3700	2	–	–	–	–	–	–	–	–	–	–	2
	3030	2	1	–	–	–	–	–	–	–	–	–	3
	3050	30	17	–	–	–	–	–	–	–	–	–	47
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
	1051	2	3	–	–	–	–	–	–	–	–	–	5
	1090	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	–	1	–	–	–	–	–	–	–	–	–	1
	1053	1	2	–	–	–	–	–	–	–	–	–	3
	1091	4	–	–	–	–	–	–	–	–	–	–	4
	1214	5	3	–	–	–	–	–	–	–	–	–	8
	1215	10	6	–	–	–	–	–	–	–	–	–	16
	1310	–	1	–	–	–	–	–	–	–	–	–	1
	1340	1	1	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	1	1	–	–	–	–	–	–	–	–	–	2
	1501	4	–	–	–	–	–	–	–	–	–	–	4
	1502	7	5	–	–	–	–	–	–	–	–	–	12
Provenience Totals:		97	56	5	0	1	0	0	0	0	0	0	159

SUMMARY

Two lines of evidence indicate that LA 12486 represents a site location inhabited during the P-IV phase of the Anasazi Period. Thirty-four fragments from a minimum of 13 ceramic vessels were found throughout the site in physical contexts suggesting their deposition concurrently with deposition of other artifactual remains, including lithic artifacts and firecracked rock by-products of hearth utilization. With the exception of a single Santa Fe B/W bowl represented by one sherd, those vessels were manufactured during the P-IV phase.

Obsidian hydration analysis of 10 artifacts recovered from the surface of LA 12486 resulted in identifiable hydration bands upon four artifacts with a mean value of 6.81 microns. The adjusted mean value, based upon three artifacts, was 4.87 microns of hydration (see Haecker, this volume). This latter figure, although obviously based upon a very small sample size, is considerably lower than similar values derived from obsidian artifacts recovered from Archaic Period contexts of deposition. The adjusted mean hydration value for LA 12486 is also slightly lower than those derived for P-III phase Anasazi Period contexts of deposition, and slightly higher than the adjusted mean value of hydration derived for LA 12454, a P-IV phase site location.

If obsidian hydration data are taken at least as minimal supportive information concerning the phase and period of formation for LA 12486, the site can be assigned in deposition to the P-IV phase of the Anasazi Period. As such, it constitutes, in conjunction with LA 12483 and possibly LA 12444, an example of P-IV economic behavior which is poorly understood at present.

Procurement, Processing and Consumption

Faunal remains comprised the only direct evidence of food resources procured and consumed within the site location. Identifiable bone fragments represented a minimum of three individuals including an adult deer, a small Artiodactyla and a medium-sized rodent. An egg shell and several small burned and unburned bone fragments which could not be identified as to part or species were recovered as well. No other faunal or floral remains were found.

Indirect evidence of possible seed or grain processing activities was represented by two metates and three manos. Metates were not located in close proximity to hearth features and only one mano was situated near a hearth facility. This distribution of milling implements stands in marked contrast to that observed across nearly all Archaic Period sites in which metates were invariably found within or immediately adjacent to hearth facilities. The distribution characterizing LA 12486 might indicate that milling activities were not performed in immediate contexts of food consumption or might indicate that specific modes of space uilization in the near vicinity of hearth facilities dictated that milling implements such as metates be located at some distance. The degree to which usage of ceramic vessels for cooking activities rather than direct roasting or stone boiling techniques might necessitate relocation of milling implements away from hearths themselves merits further investigation in this latter regard.

The distribution of firecracked rock concentrations with respect to hearth facilities at LA 12486 also stands in contrast to that observed across Archaic Period sites excavated within Cochiti Reservoir. The latter sites were generally characterized by dense concentrations of firecracked rock in the immediate vicinity of hearth facilities, whereas major concentrations of firecracked rock found within LA 12486 are distributed at some distance from the facilities. This kind of distribution may again reflect a different strategy of space utlization within the near vicinity of hearth facilities themselves. The fact that considerable amounts of firecracked rock are present within the site location, however, indicates that use of rocks as heat retainers was a common features of cooking activities at LA 12486.

A total of 13 ceramic vessels was represented in the ceramic assemblage, but only six of these were represented by more than a single sherd each. Fragments from these latter vessels were distributed throughout the site location and no apparent distributional covariation of vessel form or type with respect to hearth facilities was observed. The assemblage as a whole was characterized by a preponderance of jars (6) and ollas (4). Two bowls and a single stirrup canteen were represented as well.

With one exception, all of the jars were manufactured with tempering materials available within the Cochiti study area. Two ollas, one bowl and the canteen were manufactured with tempering materials found in the Galisteo Basin, and the occurrence of these vessels at LA 12486 again reflects the operation of an inter-regional exchange system during the P-IV phase of the Anasazi Period.

The stone tool assemblage from the site as a whole reflects a diversity of task specific activities although the number of tools is somewhat limited in nature. Facially retouched tools included a drill, projectile point fragment and two bifaces; possible use of an additional 11 bifacially retouched implements is indicated through the occurrence of resharpening flakes if each provenience locale is treated as an independent unit of observation and the number of implements represented in each is totaled for the site location.

Twenty-two pieces of debitage exhibited utilization and variability in edge outline shape and wear patterns indicate a variety of scraping and sawing usages on both resistant and nonresistant materials. Other tools recovered included a grooved sandstone shaft straightener, an ax fragment, a utilized core and six hammerstones in addition to the milling implements.

The tool assemblage thus reflects considerable diversity in task specific performance and indicates that many tasks undertaken within the site location were not directly related to procurement or processing of foodstuffs consumed at the site itself. In this sense the site appears to have served as a residence locale rather than as a specialized procurement or processing station.

The structure of artifact distribution within LA 12486 indicates a degree of functionally specific spatial partitioning in the locales at which activities were performed. By-products of tools manufacture were recovered from all provenience locales, but variability in cortical debris generated within different proveniences indicates that primary decortication was undertaken to a much greater extent in Proveniences 1 and 5, whereas manufacturing activities represented in Provenience 2 were directed toward secondary stages of core reduction and possibly toward retouch refinement of debitage. Prove-

nience 5 exhibited very limited evidence of tool utilization and may have been deposited almost entirely as a function of manufacturing activities. In general, those provenience locales encompassing hearth facilities (Proveniences 1 and 4) were characterized by relatively greater numbers of tools than were the other proveniences.

In summary, LA 12486 represents aspects of overall subsistence behavior engaged in by P-IV phase populations which have been poorly documented in the past, that of nonagricultural food procurement. The broad outlines of P-IV adaptive behavior defined through previous research are those of a sedentary population whose overall settlement strategy was dictated by variability in climate, water availability and landform as it affected the amount and distribution of arable land, and whose susbistence economy was almost entirely based upon agricultural production. Nonagricultural foodstuff procurement by P-IV phase inhabitants has been analytically treated as a secondary set of activities which were undertaken by task forces such as hunting parties if long distances were involved or by resident personnel in the near vicinity of habitation sites.

LA 12486 represents neither a specialized procurement station nor a habitation site characterized by architectural structures. It instead appears to represent a residential campsite, perhaps reoccupied on a periodic basis, at which a variety of manufacturing and maintenance activities were undertaken in addition to processing and consuming both faunal and vegetal food resources.

LA 12494

Location and Physiographic Situation

LA 12494 is a late Archaic site located on the west side of the Rio Grande River in White Rock Canyon, 225 meters upstream from the mouth of Medio Canyon, at an elevation of 5300 feet. The site is situated on the southwestern slope of a well stabilized dune, 100 meters from the river's edge and some 60 meters south of a steep talus slope leading to the canyon rim on the west side of the river. LA 12494 is located in the Upper Sonoran Juniper vegetative community, and dominant vegetation in the vicinity of the site include Junipers, rabbitbrush and a sparse cover of grama grass.

LA 12494 may have been deposited simultaneously with the occupation of LA 12495 (located ca. 15 meters to the west and south). A P-III phase Anasazi Period Site (LA 5014) is situated directly north of LA 12494.

Methodology of Excavation

The site was initially gridded into 1.0m x 1.0m squares through extending the grid system employed for LA 5014 and LA 12495. Different portions of the site area appeared to have undergone substantial post occupation erosion, and excavation was directed predominantly toward those parts of the site land surface which had not been subjected to such erosion. General excavation procedure involved initial surface mapping of each grid unit, and subsurface excavation through stripping the upper 10cm of fill within each, and screening through ¼ inch hardware cloth. In many areas, deeper subsurface excavation was undertaken if warranted by the nature of deposition. Firecracked rock and larger slabs or clasts were weighed in kilograms by level within grid units. A total of 176 1.0m x 1.0m grid units were excavated in this fashion.

Site Description

LA 12494 was documented during survey as a single provenience site characterized predominantly by lithic artifactual debris and evidence of hearth utilization in the form of firecracked rock extending over an area measuring ca. 48m x 26m. Because of the obvious erosion of the site surface and the relatively high density of artifactual remains and firecracked rock within the site boundaries, no attempt was made to stratify the site into provenience locales for purposes of survey documentation.

After excavation a total of eight intrasite provenience locales was defined. The majority of these proveniences were essentially defined as a function of excavation procedure. Spatially distinct blocks of contiguous grid units encompassing land surfaces which did not appear to be substantially eroded were selected for excavation, rather than land surfaces characterized by obvious erosional channels.

Proveniences 1, 2, 4, 5, 6 and 7 were defined in this fashion. Proveniences 3 and 8, however, were defined after analysis of artifacts and firecracked rock distributed within one large block of grid units which had been excavated contiguously.

PROVENIENCE 1

Provenience 1 is encompassed by 16 contiguous grid units in the north-central portion of the site location.

Features

A partially intact hearth facility (Feature 1) was located in grid units H31 and I31, near the north central portion of the provenience locale. The hearth was designated as Feature 1 and was originally constructed of basalt slabs placed upright into the original ground surface. The hearth was apparently roughly circular in original outline shape, and measured approximately 35cm in diameter at its base, and 20cm deep. The bottom of the feature was not lined with rock, but a 10cm thick layer of ash intermixed with sand filled the lower portion of the hearth. Slabs used to line the feature ranged in length and in height from 10cm to 20cm. Three quartzite cobbles may have been employed to line the side of the feature as well. Total weight of elements used in constructing the hearth was 11.5kg. No faunal or vegetal remains were recovered within the vicinity of the hearth.

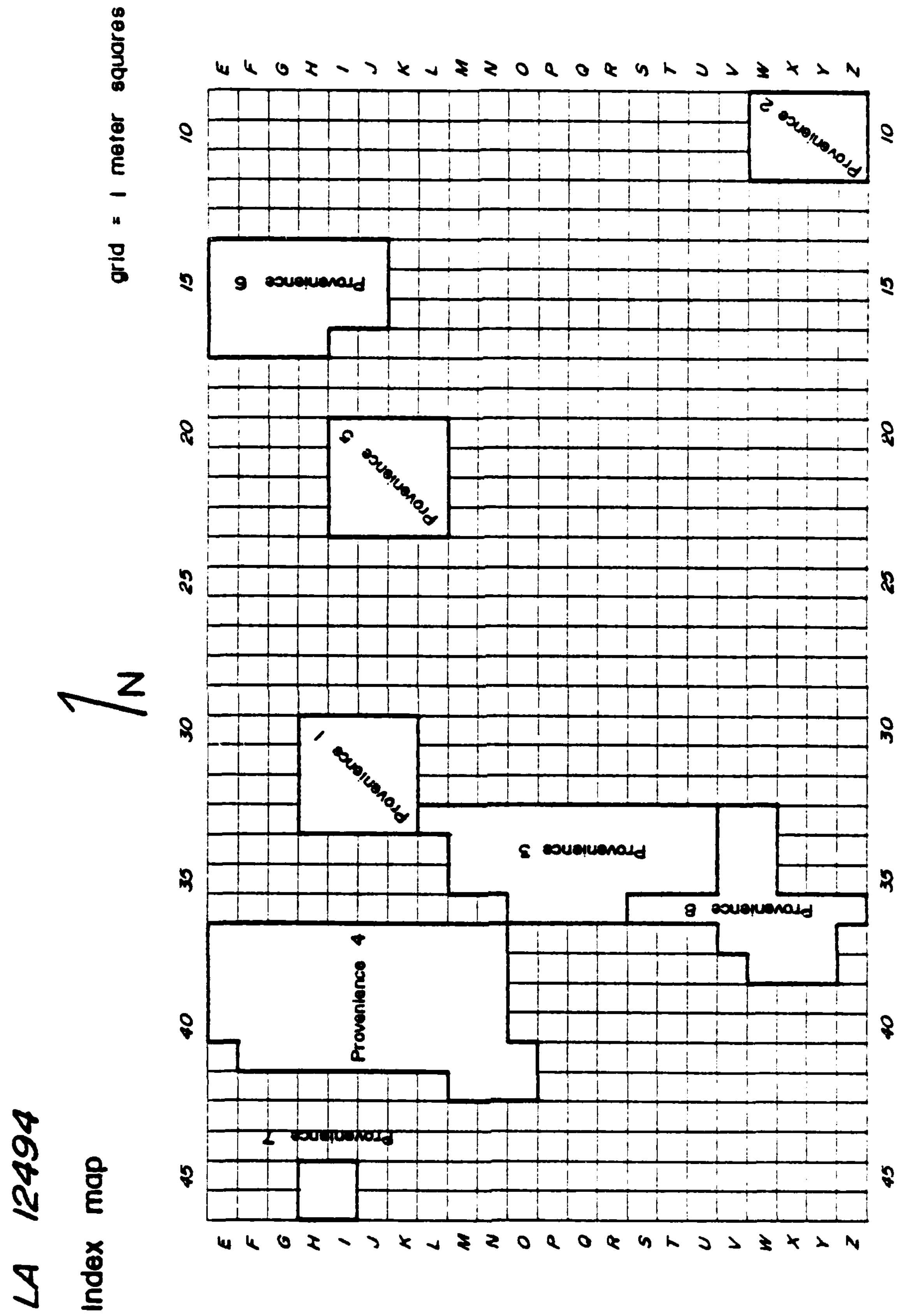


FIG. 9.46 LA 12494 - Index Map

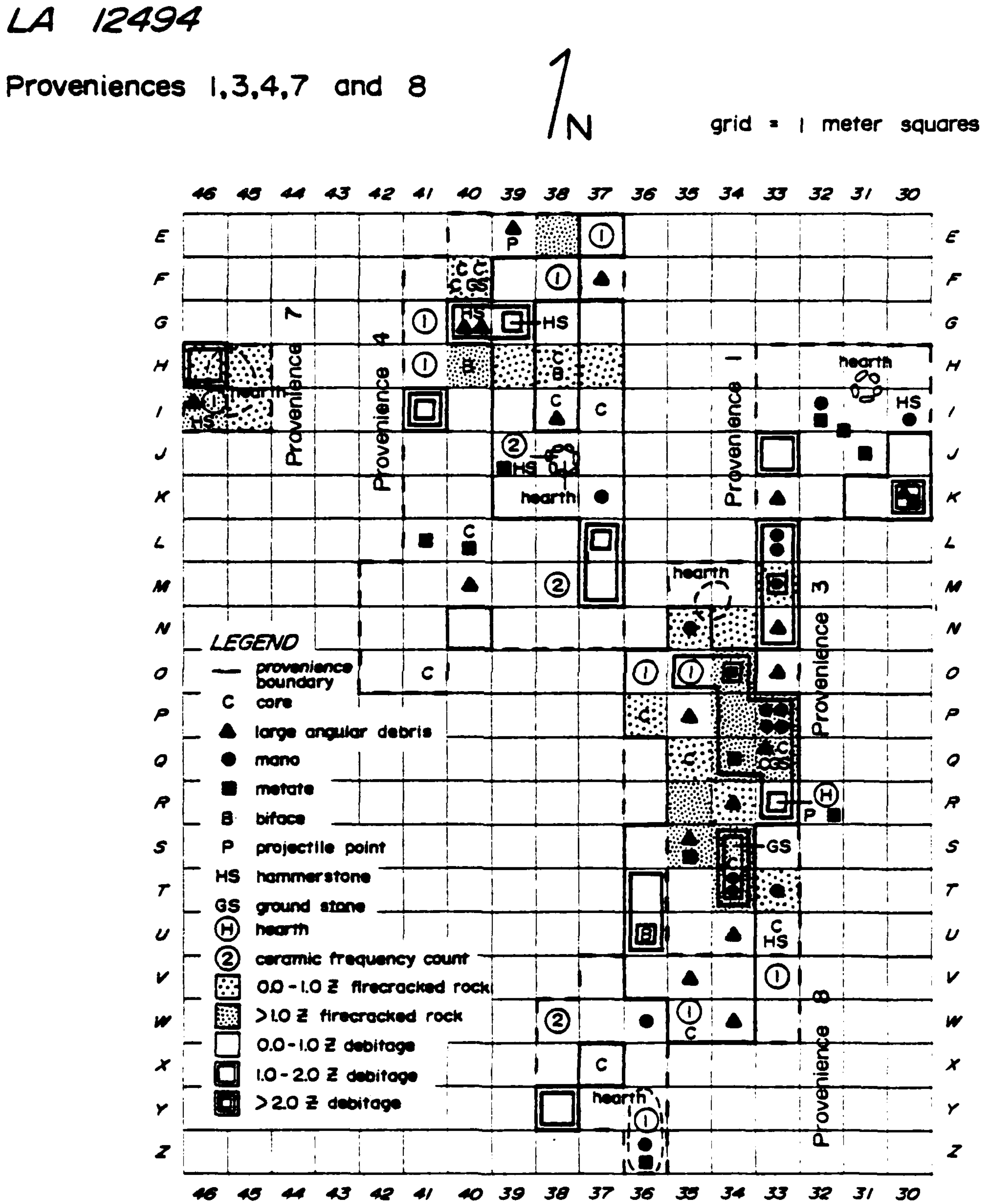


FIG. 9.47 LA 12494—Proveniences 1, 3, 4, 7 and 8

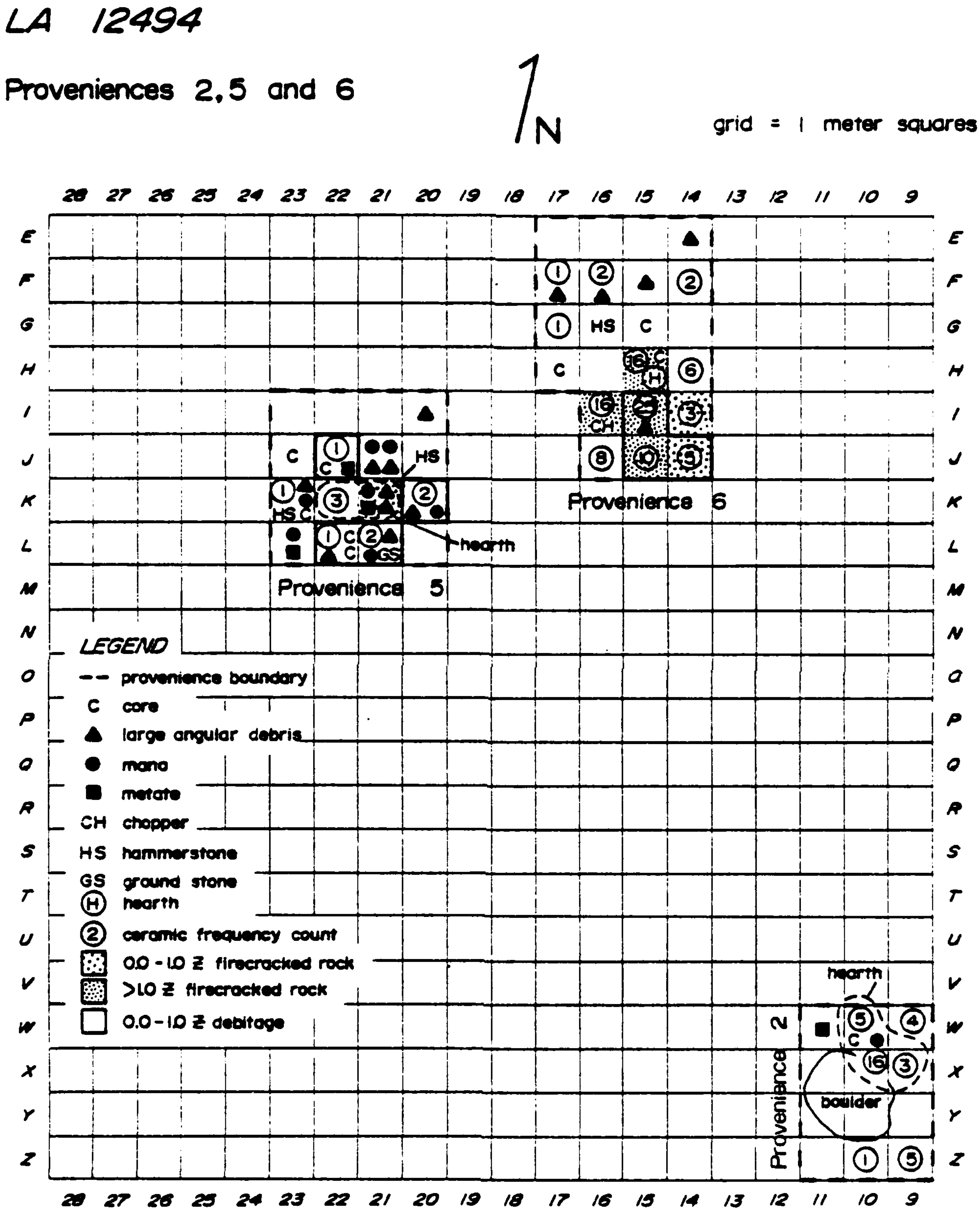


FIG. 9.48 LA 12494—Proveniences 2, 5 and 6

Although firecracked quartzite cobbles and basalt were scattered throughout grid units adjacent to the hearth, no substantial concentrations of firecracked rock were present within the provenience locale. Larger basalt slab and clast elements were, however, recovered from grid units I30-I33, on either side and slightly downslope from the hearth.

A total weight of 19.5kg of firecracked quartzite and basalt was recovered from ten of the 16 grid units comprising the provenience locale, for a mean density of 9.95kg within those grid units exhibiting firecracked rock, and of 1.22kg overall for the entire provenience locale.

Ceramics

No ceramic fragments were recovered from Provenience 1.

Lithic Artifacts

A total of 108 lithic artifacts was recovered from all of the 16 grid units comprising the provenience, and exhibited a mean frequency of 6.75 artifacts per square meter within those grid units. The majority of artifacts were debitage (88%) and metates or metate fragments (5%). Debitage was distributed in greatest density as two discrete concentrations situated about 1.5m to the southwest and southeast of the hearth feature. With the exception of one shallow basin metate, manos, metates and metate fragments were all distributed within one meter of the hearth itself.

1. Material Selection

Lithic artifacts were predominantly manufactured from *basalts (45%, 4 taxons), chalcedonies* (25%, 5 taxons), obsidians (16%, 4 taxons) and cherts (6%, 3 taxons). A single taxon each of quartzite, silicified wood, jasperoid, and granite were represented by a total of 6 artifacts. No documentation as to material taxon was available for three fragments of a slab metate recorded in the field.

With the exception of 6 pieces of 3530 obsidian deriving from the Polvadera Peak area, all 20 material taxons represented are availbable within the study area. Ninety-four percent of basalt artifacts exhibiting cortical surfaces were characterized by waterworn cortex, and may have derived from basalt cobbles along the modern beach area nearby the site location.

2. Manufacture

Only two taxons of material, 3701 basalt and 1053 chalcedony, exhibited debitage in frequencies large enough to indicate routine manufacturing activities, although several other taxons of basalt (3700, 3050), obsidian (3523, 3530) and chalcedony (1215) were represented by six to nine pieces of debitage each. No cores were recovered from the provenience, and only two pieces of basalt 3050 large angular debris were found. Nearly 44% of the entire assemblage of debitage and small angular debris exhibited cortical surfaces, ranging from 40% of the basalts to 58% of the obsidians, and only one retouch flake was found. The assemblage as a whole thus seems to be representative of initial stages of artifact manufacture, and of a very limited number of reduction episodes. A single hammerstone recovered from grid unit I30 may have been employed for such activities.

3. Tool Utilization

Milling activities were represented within Provenience 1 by two whole shallow basin metates, three fragments of possibly the same slab metate, and two whole one-hand manos. With the exception of one shallow basin metate situated in grid unit K30, all milling implements were distributed between 1.0m and 2.0m of the hearth facility. Massive processing implements such as utilized cores or large angular debris were absent, although a single hammerstone was recovered nearby the hearth facility.

No facially retouched artifacts were recovered, and no resharpening flakes were encountered, as well. Eight pieces of debitage exhibiting a total of nine utilized edges were recovered, four of which were basalt (4 edges), three of which were chalcedony (4 edges), and one of which was obsidian (1 edge). Five of the edges were retouched, and four were unretouched. Edge outline shapes, edge angles and wear patterns indicated that a diversity in task specific activities had been undertaken with the assemblage of utilized debitage.

PROVENIENCE 2

Provenience 2 is encompassed by 12 contiguous grid units and is located in the extreme southeastern portion of the site location.

Features

Surficial distribution of firecracked quartzite and basalt indicated the possible presence of a hearth facility in the vicinity of grid units *X10* and *W10*, and was designated as Feature 2. The firecracked rock was distributed partially over the surface of a large boulder which outcropped at ground surface into grid units Y10, Y11 and X11. Subsequent excavation within the provenience revealed no evidence of a hearth structure or any evidence of burning, in the form of charcoal, charcoal stain, or ash. A considerable amount of firecracked quartzite and basalt, totalling 67.8 kilograms, was ultimately recovered through surface collection and subsurface excavation within the provenience locale. Firecracked rock was distributed in greatest density within grid units X9, X10 and W11.

It should be noted that firecracked rock weights from grid units within Provenience 2 were not included in the population of weights employed to generate the firecracked rock weight z-scores for the entire site location.

Flotation of fill recovered from Feature 2 resulted in identification of a single *Portulaca* seed. No other floral or faunal remains were recovered within the provenience.

Ceramics

A total of 34 ceramic fragments from a minimum of seven different vessels was recovered from the provenience locale. P-III phase Anasazi Period vessels represented included two Santa Fe B/W bowls, a Galisteo B/W bowl, and two Blind Indented corrugated jars. Fragments from two Plain Smudged jars possibly manufactured during the Historic Period were recovered as well.

Sixteen sherds from one of the Historic Period jars, a single sherd from another Historic Period jar, and a single sherd from the Galisteo B/W bowl represented the only fragments of those vessels within the site location; while all other vessels were represented by other ceramic fragments within other provenience locales.

Lithic Artifacts

A total of 41 lithic artifacts was recovered from 7 of the 12 grid units comprising Provenience 2, thus exhibiting a mean frequency of 5.86 artifacts per square meter within those grid units encompassing artifacts, and 3.42 artifacts per square meter overall. The majority of the artifacts were debitage (73%) and small angular debris (20%). Debitage and small angular debris were distributed in comparatively low volume within the provenience, and no distinct concentrations were isolated through post excavation analysis.

1. Material Selection

Lithic artifacts within the provenience were manufactured predominantly from chalcedony (34%, 3 taxons), basalt (29%, 3 taxons), silicifed wood (15%, 2 taxons) and obsidian (12%, 2 taxons). An additional three artifacts were manufactured from a single taxon of quartzite, and one piece of chert debitage was recovered. With the exception of four obsidian (3530) artifacts, all lithic materials are available within the study area.

2. Manufacture

A single basalt 3701 core was recovered from the provenience, but none of the material taxons were characterized by substantial frequencies of debitage or small angular debris. Very few of the obsidians and basalts exhibited cortical surfaces, while the majority of silicified wood and quartzite artifacts were characterized by cortical surfaces, as were 35% of the chalcedonies. The assemblage as a whole does not reflect routine manufacturing activities.

3. Tool Utilization

Milling activities are represented within Provenience 2 by a fragment of a shallow basin metate and a whole one-hand mano recovered from two adjacent grid units in the northwestern corner of the provenience locale. No other massive processing implements, facially retouched implements or utilized debitage or small angular debris were recovered.

PROVENIENCE 3

Provenience 3, as analytically defined, is encompassed by 32 contiguous grid units situated in the east-central portion of the site location. Provenience 3 was essentially distinguished from Provenience 8 to the south because it exhibited substantially higher densities of firecracked rock and debitage than did Provenience 8.

Features

No intact hearth features were encountered during excavation within Provenience 3, but considerable evidence of hearth utilization was recovered as high density concentrations of firecracked quartzite and basalt throughout much of the provenience locale. Large basalt slabs and clasts which may once have been used to line hearth facilities were recovered from three different localities within the provenience: grid unit L33 at the extreme northern end of the provenience; grid units N34, N35, O34 and P35 in the north-central portion of the provenience; and grid unit R33 at the east-central edge of the provenience.

The weight of clasts and slabs recovered from the first of these concentrations (grid unit L33) was only 1.5kg, whereas the summed weight of such elements recovered from four grid units in the north-central part of the provenience was 21.0kg, and the weight of elements from the third concentration (grid unit R33) was 27.0kg.

It can thus be suggested that two hearth facilities may once have existed within the provenience: one in the vicinity of grid units N34, N35, O34, and P35; and another in the vicinity of grid unit R33. The highest density of firecracked rock was recovered from five contiguous grid units situated in the area between these two possible hearth locations, and from four more grid units distributed in more or less crescentic fashion to the southwest of grid unit R33.

No evidence of faunal or floral specimens were recovered within the provenience locale.

Ceramics

Two fragments of two different Anasazi Period P-III phase vessels were recovered within Provenience 3. One fragment was from a Santa Fe B/W bowl, and the other was from a Blind Indented corrugated jar. Both vessels were represented by additional ceramic fragments within other provenience locales within the site location.

Lithic Artifacts

A total of 620 lithic artifacts was recovered from 30 of the 32 grid units comprising the provenience, the majority of which were debitage (87%) and small angular debris (8%). Mean artifact frequency per square meter was 20.73 within grid units encompassing artifacts, and 19.44 for the provenience overall. The provenience locale is characterized by a considerable number of cores (6), large angular debris (7) and manos or mano fragments (11) in addition to debitage and small angular debris. Debitage and small angular debris, as monitored by weight, is distributed in relatively great density throughout the entire provenience. Two very high density of concentrations of debitage and small angular debris are encompased by grid units L33, M33, N33 and O34 at the northern end of the provenience; and by grid units R33, S34 and T34 in the southern portion of the provenience.

1. Material Selection

Lithic artifacts were manufactured predominantly from basalt (49%, 7 taxons), chalcedony (25%, 6 taxons), obsidian (15%, 5 taxons) and chert (7%, 4 taxons). The remaining artifacts were manufactured from a single taxon each of quartzite (17 artifacts), jasperoid chert (4 artifacts), greenstone (3 artifacts), metarhyolite (2 artifacts), granite (1 artifact), sandstone (1 artifact), and vitric tuff (1 artifact). One piece of debitage was not identified as to material taxon.

With the exception of 48 pieces of debitage and small angular debris manufactured from Polvadera obsidian (3530), all material taxons represented within the as-

semblage derive from source areas within the study area. Eighty-four percent of basalt debitage and small angular debris exhibiting cortical surfaces were characterized by waterworn cortex, which indicates the possible selection of some basalt materials from beach areas nearby the vicinity of the site location.

2. **Manufacture**

Of the 28 material taxons represented, 13 were characterized by frequencies of debitage and small angular debris substantial enough to indicate their possible manufacture within the provenience locale. These included three taxons of obsidian, four taxons of basalt, two taxons of chert, and four taxons of chalcedony.

A relatively low percentage of obsidian artifacts exhibited cortical surfaces, however, and no obsidian cores or large angular debris were recovered from the provenience. One basalt taxon (3701) was represented by three cores and two pieces of large angular debris, although the entire assemblage of basalt was characterized by relatively low frequencies of cortical artifacts. Larger by-products of debitage manufacture were also present from two taxons of chalcedony (1215, 1053), a single taxon of chert (1051) and quartzite.

In general, the entire assemblage of debitage indicates that freehand percussion techniques of manufacture were employed, although three pieces of obsidian debitage had been produced through bipolar percussion.

3. **Tool Utilization**

Milling activities are represented by fragments of four different basalt metates, two of which were shallow basin metates, one of which was a slab metate, and one of which could not be assigned to a formal category. A total of seven whole and two fragmentary one-hand manos was recovered, as were two fragments of manos of undetermined shape, and two additional fragments of ground stone which could not be identified as to formal category. One of the quartzite manos (grid unit L33) was characterized by two grinding surfaces, both of which exhibited hematite stains.

All of the metate fragments were distributed within grid units encompassing high densities of firecracked rock or hearth elements. Manos and mano fragments were found throughout the provenience locale.

A single hammerstone and two cores which exhibited battering utilization comprised the only other evidence of processing activities involving massive implements. Use of facially retouched implements is represented by a proximal fragment of an obsidian (3520) unnotched biface, three resharpening flakes of 3530 obsidian, a single resharpening flake of 3525 obsidian and another resharpening flake of basalt.

Fourteen pieces of debitage exhibited a total of 17 utilized edges, seven of which had been unidirectionally retouched and two of which had been bidirectionally retouched. Edge outlines were predominantly straight and convex, and nonsinuous. Five of the edges exhibited wear patterns indicative of scraping utilization, and the remainder exhibited wear patterns indicative of sawing utilization.

A spherical object manufactured from vitric tuff and measuring ca. 4cm in diameter was recovered from grid unit R34. Two indentations 4mm deep had been pecked into opposite surfaces of the artifact. The artifact exhibited no good evidence of alteration as a function of usage.

PROVENIENCE 4

Provenience 4 is encompassed by 53 grid units situated in the northeastern portion of the site location.

Features

An intact hearth facility (Feature 3) was located in grid unit J38 near the center of the provenience locale. The hearth was oval in outline shape and its interior dimensions were 66cm in major axis and 46cm in minor axis. The perimeter of the hearth was lined with cobbles of quartzite and vesicular basalt ranging between 20cm and 30cm in largest dimension. The hearth was 15cm deep and was lined on the bottom with smaller quartzite cobbles and a metate fragment. Fill within the hearth consisted of charcoal stained sand, but no large particles of charcoal were recovered. Charcoal stain extended a few centimeters outward from the hearth perimeter and below the base of the hearth. A single fragment of burned bone weighing less than a gram and which could not be identified as to part or species was recovered from the fill of the hearth.

The hearth was not situated nearby any distinct concentrations of firecracked rock, which may indicate that it was not employed for cooking activities involving heat retaining elements. Total weight of elements used to construct the hearth was 19.0kg.

No other intact hearth facilities were found during excavation, although several grid units in the northern portion of the provenience encompassed relatively high densities of firecracked rock which was intermixed with charcoal stained soil. No larger cobbles, slabs or clasts were recovered in the vicinity of the firecracked rock, however, and the location of any hearth which may have resulted in deposition of the firecracked rock could not be ascertained. Small fragments of burned and unburned bone, totaling six grams in weight, were recovered from five grid units within the provenience, and a fragment of shell tentatively identified as a freshwater bivalve mollusk (possibly *Mya* or *Macosa*) was recovered from a sixth grid unit. Bone and the shell fragment were predominantly distributed in the vicinity of the northern firecracked rock concentration.

Ceramics

Eight fragments from five different Anasazi Period P-III phase ceramic vessels were recovered from various grid units within the provenience locale. All vessels were represented by other ceramic fragments in other provenience locales, and included three Santa Fe B/W bowls and two Blind Indented corrugated jars.

Lithic Artifacts

A total of 774 lithic artifacts was recovered from all of the 53 grid units comprising Provenience 4. Mean artifact frequency was 14.60 artifacts per square meter within those grid units. The majority of artifacts were debitage (86%) and small angular debris (11%). Debitage and small angular debris was distributed in greatest density (as monitored by weight) over an extensive

area in the eastern and northern portions of the provenience. Three small high density concentrations were encompassed by grid units G39, G40; I41; and L37, M37 respectively. Larger by-products of debitage manufacture such as cores and large angular debris were distributed through the provenience locale, although several such artifacts were clustered in the vicinity of grid units F40 and G40 in the northern portion of the provenience.

1. Material Selection

Materials from which lithic artifacts were manufactured included basalt (51%, 5 taxons), chalcedony (31%, 7 taxons), obsidian (10%, 6 taxons) and chert (6%, 5 taxons). The remaining artifacts were manufactured from quartzite (13 artifacts, 2 taxons), silicified wood (2 artifact, 2 taxons), jasperoid chert (2 artifacts, 1 taxon) and metarhyolite (3 artifacts, 1 taxon).

With the exception of 39 artifacts manufactured from Polvadera obsidian (3530) and a single piece of obsidian 3550 debitage deriving from a source in the Red Hill area of New Mexico, all materials represented are from source areas within the study area. Nearly ninety percent of basaltic cortical artifacts exhibited waterworn cortex, which indicates the possible selection of some basalts from source areas along the Rio Grande River nearby the source location itself.

2. Manufacture

Three taxons of obsidian (3520, 3523, 3530) were represented by more than ten artifacts each, but the obsidian assemblage was characterized by relatively low frequencies of cortical debris, and no larger by-products of manufacture such as cores or large angular debris.

Two taxons of basalt (3700, 3701) were represented by over 100 artifacts, and two other taxons (3030, 3050) were represented by over 20 pieces of debitage. Like the assemblage of obsidians, cortical debris constituted a relatively low percentage of basalt artifacts, but both the 3700 and 3701 taxons included cores.

Two taxons of chert (1051, 1090) were represented by more than ten pieces of debitage or small angular debris, although no chert cores or large angular debris were recovered. Several taxons of chalcedony (including 1052, 1053, 1091, 1215 and 1310) were represented by more than 10 artifacts; and 1053 was represented by 116 artifacts. Cores and large angular debris were recovered only for chalcedony taxons 1053 and 1215, but between thirty-five and forty percent of all chert and chalcedony debitage exhibited cortical surfaces.

In general, a freehand rather than bipolar technique of reduction appears to have been employed to manufacture the majority of debitage recovered from the provenience locale. Debitage platforms were predominantly either cortical or noncortical single facets, and only four obsidian pieces of debitage and two basalt pieces of debitage exhibited evidence of having been manufactured through bipolar percussion.

3. Tool Utilization

Milling activities were represented by three fragments from at least two metates, one slab and one shallow basin; a fragment of a two-hand metate, and an additional fragment of ground stone which could not be identified as to formal category. These fragments were dispersed predominantly over the south-central portion of the provenience locale. A single core exhibiting one utilized edge and three hammerstones comprised the only other

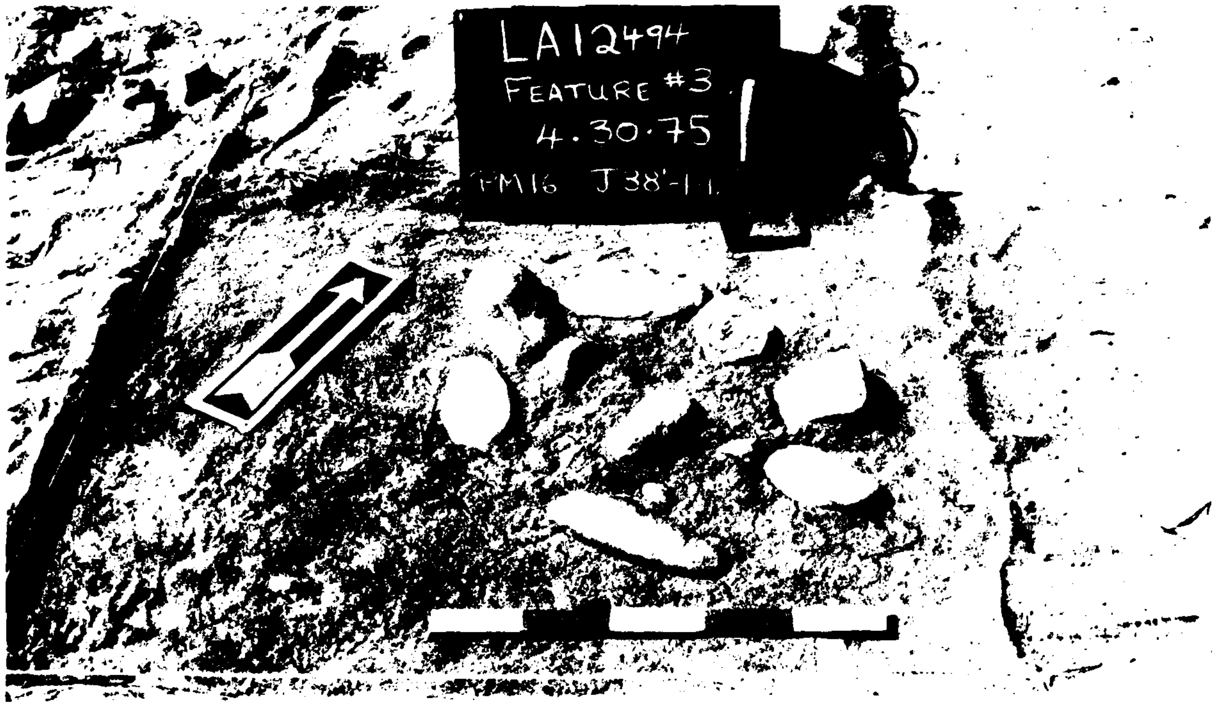


FIG. 9.49 LA 12494 Feature 3

evidence of utilization of massive implements.

Utilization of facially retouched implements was represented by a whole corner notched projectile point (3530 obsidian), the distal fragment of another obsidian biface (3520) and a whole large basalt unnotched biface (3701). Four retouch flakes and three resharpening flakes from two taxons of obsidian (3530, 3523), two taxons of basalt (3701, 3700) and two taxons of chalcedony (1091, 1215) were also recovered, which in conjunction with the three bifaces indicate the manufacture or usage of at least seven bifacially retouched implements within the provenience.

A relatively large number of utilized pieces of debitage (24) exhibited a total of 28 utilized edges, five of which had been unidirectionally retouched. Edge outlines were predominantly straight (10) and convex (11), although four concave-convex edges and three projections were observed as well. Nearly all edges exhibited relatively acute edge angles and wear patterns indicative of sawing and scraping utilization. The basalt edges in particular were characterized by a high degree of rounding, polish, and striations perpendicular to the long axis of the utilized edge margin, indicating their usage in scraping or whittling fashion.

PROVENIENCE 5

Provenience 5 is encompassed by 16 contiguous grid units excavated in the northeastern portion of the site location.

Features

No intact hearth features were defined during excavation of the provenience, although nearly all grid units exhibited relatively low densities of firecracked quartzite and basalt. Two large basalt clasts were recovered from grid unit K22, and the highest density of firecracked rock within the provenience was recovered from an adjacent grid unit, K21. The degree to which these two grid units represent an "epicenter" of an eroded or deflated hearth facility is subject to some question. The base of an antler (*Odocoileus* spp.) was recovered from grid unit K23, which appeared to have been naturally shed rather than dismembered. No other evidence of faunal or floral utilization was recovered within the provenience.

Ceramics

A total of 10 fragments from five different Anasazi Period P-III phase ceramic vessels was recovered within the provenience locale. Vessels represented included three Santa Fe B/W bowls, a Galisteo B/W bowl and a single Blind Indented corrugated jar. With the exception of the Galisteo B/W bowl, which was represented by a single sherd, all vessels were represented by other fragments in other proveniences within the site location.

Lithic Artifacts

A total of 141 lithic artifacts was recovered from all of the 16 grid units comprising Provenience 5. Mean lithic artifact density by frequency count within the provenience locale was 8.81 artifacts per square meter. The majority of artifacts were pieces of debitage (77%), although the provenience locale was characterized by relatively great frequencies of cores, large angular debris, manos and mano fragments. The larger lithic artifacts were distributed more or less ubiquitously throughout the entire central and southern portion of the provenience local. Debitage and small angular debris were present in relatively low density as monitored by weight, and was distributed as two discrete concentrations in grid unit J22, and in grid units L22, L21 and K20.

1. Material Selection

Lithic artifacts were manufactured predominantly from chalcedony (35%, 6 taxons), basalt (34%, 4 taxons) and obsidian (23%, 5 taxons). The remaining 12 artifacts were manufactured from a single taxon each of quartzite (5 artifacts), chert (2 artifacts), jasperoid chert (1 artifact), metarhyolite (1 artifact) and diatomite (1 artifact). An additional mano and mano fragment documented in the field for which no material taxon information is available were represented in the assemblage.

With the exception of 12 artifacts manufactured from Polvadera Peak obsidian (3530), all materials derive from sources within the study area.

2. Manufacture

No material taxons were represented by more than 18 pieces of debitage and small angular debris, although six taxons were represented by 10 or more such artifacts. Larger by-products of reduction were present for three taxons of basalt (3050, 3700, 3701) and three taxons of chalcedony (1053, 1215, 1310). Cortical debris constituted approximately 40% of the obsidian and chalcedony debitage and small angular debris, but only 29% of the basalt assemblage. No evidence of bipolar percussion techniques of manufacture was observed, and the majority of platforms for all materials were either cortical or noncortical single facets.

3. Tool Utilization

Milling activities were represented by two fragments of possibly the same slab metate, a whole shallow basin metate, three whole and one fragmentary one-hand manos, a whole mano which was not assigned to a formal taxon and two mano fragments of undetermined formal taxon. An additional artifact exhibiting ground surfaces was manufactured from diatomite. A one-hand mano manufactured from basalt and exhibiting a single grinding surface with hematite stains was recovered from grid unit K20.

Whole and fragmentary milling implements were distributed throughout the southern three-quarters of the provenience locale.

No facially retouched implements were recovered, but one retouch flake and two resharpening flakes from three different taxons of obsidian indicate that a minimum of three different obsidian bifaces were either manufactured or utilized within the provenience.

Four pieces of debitage exhibited a total of five utilized edges. All five edges were either straight or convex in outline shape, four of which were characterized by wear patterns indicative of sawing utilization, and one of which was characterized by wear patterns indicative of scraping utilization. One chalcedony edge characterized by wear patterns indicative of sawing utilization exhibited hematite stains.

PROVENIENCE 6

Provenience 6 is encompassed by 22 contiguous grid units situated in the northeastern portion of the site location.

Features

Evidence of a partially intact hearth facility was recovered as a concentration of large basalt slabs and clasts in grid units H15 and I15, and a dense scatter of firecracked quartzite cobbles and basalt extending from those grid units to the south. A firehardened patch of soil was found near the center of grid unit H15, and an ash lens extended over an area some 60cm in diameter from the burned soil throughout the southeastern portion of the grid unit. Total weight of larger elements in grid units H15 and I15 was 35.5kg, and total weight of firecracked rock within the provenience was 65kg.

Three maxillae fragments from a cottontail rabbit (*Sylvilagus* spp.) were recovered from grid unit G14, a large mammal long bone shaft fragment was found in grid unit F16, and a total weight of eight grams of unidentifiable unburned bone fragments were recovered from grid unit G15. The faunal specimens may represent by-products of food preparation activities involving utilization of the hearth.

Ceramics

A total of 95 fragments from a minimum number of 14 ceramic vessels was recovered from several grid units within the provenience locale. With the exception of a single sherd from a Historic Period bowl, all fragments are from Anasazi Period P-III phase vessels. Vessels represented included Santa Fe B/W bowls (5), Wiyo B/W bowls (3), Blind Indented corrugated jars (2), two unidentified white ware bowls, and a single unidentified redware olla. Nine of the vessels represented exhibit ceramic fragments found only within Provenience 6, but these vessels were generally characterized by no more than three sherds.

Historic Artifacts

A lead button exhibiting four holes was found on the surface of grid unit H16.

Lithic Artifacts

A total of 232 lithic artifacts was recovered form all of the 22 grid units comprising Provenience 6. Mean artifact frequency within the provenience locale was 10.59 artifacts per square meter. The majority of artifacts were debitage (85%) and small angular debris (10%).

Larger by-products of reduction were distributed rather uniformly throughout the provenience locale. Debitage and small angular debris as monitored by weight, was distributed in comparatively low density throughout the provenience, although one small concentration was apparent in grid units I15, J14 and J15.

1. Material Selection

Lithic artifacts were manufactured predominantly from basalt (36%, 4 taxons), chalcedony (36%, 7 taxons), obsidian (14%, 6 taxons) and chert (9%, 3 taxons). An additional 6 artifacts were manufactured from two taxons of quartzite, two artifacts from jasperoid chert, and one artifact from metarhyolite.

With the exception of 13 pieces of Polvadera obsidian (3530) and two pieces of Mt. Taylor obsidian (3510), all materials derive from sources within the study area. The majority of basalt cortical artifacts were characterized by a water-worn cortex, indicating the possible selection of some basalt materials from beach areas along the Rio Grande River nearby the site location.

2. Manufacture

Although no material taxons were characterized by more than 31 pieces of debitage or small angular debris, seven taxons were represented by 10 or more such artifacts. These included a single taxon of obsidian (3530), three taxons of basalt (3050, 3700, 3701), one taxon of chert (1050) and three taxons of chalcedony (1053, 1215, 1310). Of these taxons, all three basaltic materials and two of the chalcedony materials were represented by larger by-products of reduction. Relative frequencies of cortical artifacts ranged from a low of 22% for cherts to a high of 45% for chalcedonies.

Platforms of all materials were predominantly either noncortical single facets, or cortical surfaces, and no evidence that bipolar techniques of reduction were employed in artifact manufacture was observed. A single hammerstone which may have been used for debitage manufacture was recovered within the provenience locale.

3. Tool Utilization

No evidence of milling activities was recovered, and the only massive implements found included a hammerstone and a single piece of large angular debris which exhibited battering wear. No facially retouched implements were recovered, although either manufacture or usage of a minimum of two obsidian bifaces and one basalt biface was indicated by three retouch flakes and a single resharpening flake.

Four pieces of debitage exhibited a total of six utilized edges. One obsidian artifact exhibited three unidirectionally retouched concave edges which were characterized by wear patterns indicative of scraping utilization. The other three artifacts were manufactured from basalt, chalcedony and quartzite and exhibited a single unretouched edge each. These edges included one projection, one straight edge, and one convex edge. The edges were characterized by a variety of wear patterns.

PROVENIENCE 7

Provenience 7 is encompassed by four contiguous grid units situated in the extreme northwest corner of the site location.

Features

The provenience locale was characterized by a dense concentration of firecracked quartzite cobbles and basalt ca. 1.5m in diameter (Feature 4). No good evidence of a hearth facility was observed, but the summed weight of the firecracked rock concentration was 10.0kg. No faunal or floral specimens were recovered from within the provenience, and no charcoal stain or ash was observed within the vicinity of the firecracked rock concentration.

Ceramics

A single fragment of a Santa Fe B/W bowl was re-

covered from grid unit I46.

Lithic Artifacts

A total of 31 lithic artifacts was recovered from all four grid units comprising Provenience 7, the majority of which were debitage (85%) and small angular debris (13%). Mean artifact frequency was 7.75 artifacts per square meter. One grid unit, H46, exhibited a relatively dense concentration of debitage and small angular debris, as monitored by weight.

1. Material Selection and Manufacture

Lithic artifacts were predominantly manufactured from basalt (58%, 3 taxons) and chalcedony (29%, 4 taxons). A single piece of obsidian debitage, chert debitage and two quartzite artifacts (2 taxons) were recovered as well for a total of 11 material taxons. All materials represented derive from sources within the study area.

Although a single hammerstone was recovered within the provenience which may have been used in debitage manufacture, none of the materials were represented by frequencies of debitage substantial enough to indicate that routine manufacturing activities were undertaken within the provenience.

2. Tool Utilization

No evidence of milling activities were recovered from the provenience, and a single hammerstone was the only other massive processing implement found. In addition to the hammerstone, three pieces of basalt debitage exhibiting one utilized edge each comprised the entire tool assemblage. All three edges were unretouched, straight or convex in outline shape, and exhibited wear patterns indicative of scraping utilization (one edge) and possible sawing utilization (two edges).

PROVENIENCE 8

Provenience 8 was encompassed by 21 grid units situated directly south of Provenience 3.

Features

Evidence of a possible hearth facility (Feature 5) was recovered as a dense concentration of firecracked basalt, firecracked quartzite cobbles and several larger basalt slabs and clasts within grid units Y36 and Z36 at the extreme southern portion of the provenience. No charcoal or charcoal stain was observed within this concentration. The summed weight of all firecracked rock and possible constructional elements comprising the feature was 48.8kg. Two unburned bone fragments totaling 2g in weight were recovered within Feature 5. Neither could be identified as to part or species.

Ceramics

Five fragments from a minimum number of two ceramic vessels were recovered from within the provenience locale. Vessels represented included a Wiyo B/W bowl and a Blind Indented corrugated jar.

Lithic Artifacts

A total of 471 lithic artifacts was recovered from 18 of the 21 grid units comprising Provenience 8, nearly all of which were either debitage (85%) or small angular debris (13%). Mean artifact frequency was 26.28 artifacts per square meter within grid units encompassing artifacts, and 22.52 artifacts per square meter overall. Provenience 8 was characterized by relatively few cores, large angular debris, manos or metate fragments in comparison to other provenience locales, and these large artifacts were distributed more or less ubiquitously throughout the provenience. Debitage, as monitored by weight, was distributed as two high density concentrations situated near the northern and southern ends of the provenience.

1. Material Selection

Lithic artifacts were predominantly manufactured from basalt (45%, 5 taxons), chalcedony (28%, 5 taxons), obsidian (21%, 5 taxons) and chert (4%, 6 taxons). The remaining artifacts were manufactured from a single taxon of quartzite (7 artifacts) and a single taxon of silicified wood (2 artifacts). A total of thirty-six pieces of debitage and small angular debris were manufactured from Polvadera obsidian, and the remainder of lithic materials derive from source areas within the study area. Over 80% of basalt artifacts exhibiting cortical surfaces were characterized by waterworn cortex, which may indicate selection of some basalt materials from beach areas along the Rio Grande River nearby the site location.

2. Manufacture

Large by-products of reduction were present for only two material taxons, 3701 basalt and 3520 obsidian, and no hammerstones were recovered within the provenience locale. Despite this relative paucity of cores and large angular debris, a total of twelve material taxons were represented by more than ten pieces of debitage or small angular debris. These included three taxons of obsidian, four taxons of basalt, four taxons of chalcedony and one taxon of chert. Forty-two percent of the chalcedony and 50% of the chert debitage and small angular debris exhibited cortical surfaces, while only 23% of the basalt and 26% of the obsidian artifacts were characterized by cortical surfaces. Platforms of all materials were both cortical and noncortical single facets, and only one piece of obsidian debitage was definitely produced through bipolar manufacture. The substantial number of debitage and small angular debris generated from a variety of material taxons indicates that manufacturing activities may have been routinely undertaken within the provenience locale.

3. Tool Utilization

Milling implements recovered from the provenience included a slab metate fragment, a whole one-hand mano and a one-hand mano fragment. No other massive processing implements were found. A proximal fragment of an unnotched chalcedony biface was recovered, and evidence of utilization of at least five additional bifaces was observed as nine resharpening flakes which had been detached from a minimum of four obsidian bifaces and one basalt biface.

A total of ten pieces of debitage and four pieces of small angular debris exhibited 15 utilized edges. These tools were manufactured from obsidian (8 artifacts, 9 edges), basalt (5 artifacts, 5 edges) and chalcedony (1 artifact, 1 edge). Seven of the obsidian edges had been unidirectionally retouched, as had two of the basalt

TABLE 9.65

LA 12494--PROVENIENCES 2,3,4 and 5

CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE & TEMPER	FORM	PROV. 2						PROV. 3		PROV. 4						PROV. 5						TOTAL
		Feat. 2	W9	W10	X9	Z9	Z10	O35	O36	E37	F38	G41	H41	J38	M38	J22	K20	K22	K23	L21	L22	
Santa Fe B/W crystal pumice	bowl	1	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–	4
silt & mica or biotite	bowl	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	2
black shard	bowl	–	1	–	–	–	–	1	–	–	–	–	1	2	–	–	–	–	1	–	1	7
Galisteo (?) B/W crushed sherd	bowl	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2
Blind Indented Corrugated quartz crystals	jar	4	2	1	–	2	1	–	1	–	1	–	–	–	1	1	2	1	–	1	–	18
miscellaneous	jar	3	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	4
Plain utility, smudged igneous	jar	8	1	2	2	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	16
andesite, vitrophyre	jar	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
TOTAL		16	4	5	3	5	1	1	1	1	1	1	1	2	2	1	2	3	1	2	1	54

TABLE 9.66

LA 12494–PROVENIENCES 6, 7 and 8

CERAMIC TYPE AND TEMPER VARIABILITY

GRIDS--LEVEL 1

CERAMIC TYPE & TEMPER	FORM	PROV. 6 F14*	F16	F16*	F17*	G17	H14	H14*	H15	I14	I15	I16	J14	J15	J16	PROV. 7 I46	PROV. 8 Feat. 5	V33	V35	W38	TOTAL
Santa Fe B/W crystal pumice	bowl	—	—	—	1	—	—	—	3	—	—	2	—	2	—	—	—	—	—	—	8
sherd	bowl	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
silt & mica or biotite	bowl	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—	—	2
black shard	boql	—	—	—	—	—	1	—	1	—	1	1	—	—	2	—	—	—	—	—	6
Wiyo(?)B/W crystal pumice	bowl	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	3
black shard	bowl	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	3
coarse sand	bowl	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	2
Unidentified whiteware hornblende latite	bowl	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1
fine tuff	bowl	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1
Unidentified redware (glaze) scoria	olla	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	3
Blind Indented Corrugated quartz crystals	jar	1	—	1	—	1	—	2	10	2	18	13	3	8	5	—	—	1	1	2	68
miscellaneous	jar	—	—	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	2
Plain utility fine sandstone	jar	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
	TOTAL	2	1	1	1	1	1	5	16	3	25	16	5	10	8	1	1	1	1	2	101

* level 2

TABLE 9.67

LA 12494—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3520	2	–	–	–	–	–	–	–	–	–	–	2
	3523	6	1	–	–	–	–	–	–	–	–	–	7
	3524	2	–	–	–	–	–	–	–	–	–	–	2
	3530	6	–	–	–	–	–	–	–	–	–	–	6
Basalt:	3701	29	–	–	–	–	–	–	–	–	–	–	29
	3700	6	–	–	–	–	–	–	–	–	–	–	6
	3030	1	–	–	–	–	–	–	–	–	–	–	1
	3050	9	–	–	–	2	–	–	–	–	2	–	13
Chert:	1050	1	–	1	–	–	–	–	–	–	–	–	2
	1051	3	–	–	–	–	–	–	–	–	–	–	3
	1090	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1053	14	1	–	–	–	–	–	–	–	–	–	15
	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1215	7	1	–	–	–	–	–	–	–	–	–	8
	1310	1	–	–	–	–	–	–	–	–	–	–	1
Silicified Wood:	1140	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	1	–	–	–	–	–	–	–	2	–	–	3
	1501	1	–	–	–	–	–	–	–	–	–	–	1
Granite & Ands.:	3101	–	–	–	–	–	–	1	–	–	–	–	1
Other:	9999	–	–	–	–	–	–	–	–	–	3	–	3
Prov. Total		94	3	1	0	2	0	1	0	2	5	0	108
PROVENIENCE 2													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3530	2	1	1	–	–	–	–	–	–	–	–	4
Basalt:	3701	3	2	–	1	–	–	–	–	–	–	–	6
	3700	1	–	–	–	–	–	–	–	–	–	–	1
	3050	4	–	–	–	–	–	–	–	–	–	–	4
	3450	–	–	–	–	–	–	–	–	–	1	–	1
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	2	1	–	–	–	–	–	–	–	–	–	3
	1053	7	2	–	–	–	–	–	–	–	–	–	9
	1015	–	2	–	–		–	–	–	–	–	–	2
Silicified Wood:	1112	5	–	–	–	–	–	–	–	–	–	–	5
	1140	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	2	–	–	–	–	–	–	–	1	–	–	3
Prov. Total:		29	8	1	1	0	0	0	0	1	1	0	41
PROVENIENCE 3													
Obsidian:	3520	21	1	–	–	–	–	–	1	–	–	–	23
	3523	16	1	–	–	–	–	–	–	–	–	–	17
	3524	2	–	–	–	–	–	–	–	–	–	–	2
	3525	4	–	1	–	–	–	–	–	–	–	–	5
	3530	41	4	3	–	–	–	–	–	–	–	–	48

TABLE 9.67 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Basalt:	3701	195	10	1	3	2	–	–	–	–	–	–	211
	3700	18	1	–	–	–	–	–	–	–	–	–	19
	3731	2	–	–	–	–	–	–	–	–	–	–	2
	3030	24	–	–	–	–	–	–	–	1	2	–	27
	3430	–	–	–	–	–	–	–	–	1	1	–	2
	3400	8	–	–	1	–	–	–	–	–	–	–	9
	3050	29	1	1	–	–	–	–	–	1	1	–	33
Chert:	1050	7	4	–	–	–	–	–	–	–	–	–	11
	1051	14	3	–	1	1	–	–	–	–	–	–	19
	1090	4	–	–	–	–	–	–	–	–	–	–	4
	1030	6	–	–	–	–	–	–	–	–	–	–	6
Chalcedony:	1052	14	2	–	–	–	–	–	–	–	–	–	16
	1053	71	11	–	–	1	–	–	–	–	–	–	83
	1091	16	3	–	–	–	–	–	–	–	–	–	19
	1215	18	6	–	1	2	–	–	–	–	–	–	27
	1310	5	–	–	–	–	–	–	–	–	–	–	5
	1340	2	1	–	–	–	–	–	–	–	–	–	3
Quartzite, Jasp.:	4000	5	1	–	–	1	–	1	–	9	–	–	17
	1501	4	–	–	–	–	–	–	–	–	–	–	4
	1502	2	–	–	–	–	–	–	–	–	–	–	2
Sandstone:	2000	–	–	–	–	–	–	–	–	1	–	–	1
Granite & Ands.:	3000	1	–	–	–	–	–	–	–	–	–	–	1
Slate, Shale, Fr.:	4526	3	–	–	–	–	–	–	–	–	–	–	3
Other Materials:	9999	1	–	–	–	–	–	–	–	–	–	–	1
Prov. Totals:		533	49	6	6	7	0	1	1	13	4	0	620
PROVENIENCE 4													
Obsidian:	3520	9	2	–	–	–	–	–	1	–	–	–	12
	3523	22	1	1	–	–	–	–	–	–	–	–	24
	3524	2	–	–	–	–	–	–	–	–	–	–	2
	3525	1	–	–	–	–	–	–	–	–	–	–	1
	3530	33	3	2	–	–	–	–	1	–	–	–	39
	3550	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	170	17	1	5	–	–	–	1	–	–	–	194
	3700	100	9	1	2	1	–	–	–	–	–	–	113
	3030	22	1	–	–	–	–	–	–	–	–	–	23
	3050	55	4	–	–	–	–	–	–	–	3	–	62
	3430	–	–	–	–	–	–	–	–	1	–	–	1
Chert:	1050	4	1	–	–	–	–	–	–	–	–	–	5
	1051	15	3	–	–	–	–	–	–	–	–	–	18
	1070	1	–	–	–	–	–	–	–	–	–	–	1
	1090	15	4	–	–	–	–	–	–	–	–	–	19
	1030	1	1	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	23	–	–	–	–	–	–	–	–	–	–	23
	1053	94	21	–	–	3	–	–	–	–	–	–	118
	1091	32	2	1	–	–	–	–	–	–	–	–	35
	1214	–	1	–	–	–	–	–	–	–	–	–	1
	1215	29	7	1	1	2	–	–	–	–	–	–	40
	1310	16	1	–	–	–	–	–	–	–	–	–	17
	1340	3	–	–	–	–	–	–	–	–	–	–	3
Silicified Wood:	1100	1	–	–	–	–	–	–	–	–	–	–	1
	1140	1	–	–	–	–	–	–	–	–	–	–	1

TABLE 9.67 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Quartzite, Jasp.:	4000	5	3	–	–	–	–	3	–	1	–	–	12
	4001	–	1	–	–	–	–	–	–	–	–	–	1
	1501	2	–	–	–	–	–	–	–	–	–	–	2
	1502	1	2	–	–	–	–	–	–	–	–	–	3
Prov. Totals		658	84	7	8	6	0	3	3	2	3	0	774
PROVENIENCE 5													
Obsidian:	3520	5	–	1	–	–	–	–	–	–	–	–	6
	3523	8	1	1	–	–	–	–	–	–	–	–	10
	3524	1	–	–	–	–	–	–	–	–	–	–	1
	3525	3	–	–	–	–	–	–	–	–	–	–	3
	3530	10	1	1	–	–	–	–	–	–	–	–	12
Basalt:	3701	18	–	–	1	3	–	–	–	–	–	–	22
	3430	–	–	–	–	–	–	–	–	–	1	–	1
	3700	10	–	–	1	1	–	–	–	–	–	–	12
	3050	7	–	–	2	–	–	–	–	2	2	–	13
Chert:	1051	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	5	–	–	–	–	–	–	–	–	–	–	5
	1053	15	1	–	–	1	–	–	–	–	–	–	17
	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1214	2	–	–	–	–	–	–	–	–	–	–	2
	1215	11	1	–	1	–	–	–	–	–	–	–	7
	1310	5	1	–	–	–	–	–	–	–	–	–	6
Quartzite, Jasp.:	4000	–	–	–	–	–	–	2	–	3	–	–	5
	1501	1	–	–	–	–	–	–	–	–	–	–	1
	1502	1	–	–	–	–	–	–	–	–	–	–	1
Other Materials:	2810	–	–	–	–	–	–	–	–	1	–	–	1
	9999	–	–	–	–	–	–	–	–	2	–	–	2
Prov. Totals		106	5	3	5	9	0	2	0	8	3	0	141
PROVENIENCE 6													
Obsidian:	3520	4	–	1	–	–	–	–	–	–	–	–	5
	3523	4	–	2	–	1	–	–	–	–	–	–	7
	3524	2	–	–	–	–	–	–	–	–	–	–	2
	3525	1	2	–	–	–	–	–	–	–	–	–	3
	3530	11	1	–	–	–	–	–	–	–	–	–	12
	3510	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3701	18	2	–	–	1	–	–	–	–	–	–	21
	3700	25	–	–	2	1	–	–	–	–	–	–	28
	3030	3	1	–	–	–	–	–	–	–	–	–	4
	3050	30	–	1	1	–	–	–	–	–	–	–	32
Chert:	1050	10	1	–	–	–	–	–	–	–	–	–	11
	1051	5	1	–	–	–	–	–	–	–	–	–	6
	1090	3	2	–	–	–	–	–	–	–	–	–	5
Chalcedony:	1052	2	–	–	–	–	–	–	–	–	–	–	2
	1053	24	6	–	–	1	–	–	–	–	–	–	31
	1091	5	–	–	–	–	–	–	–	–	–	–	5
	1214	1	–	–	–	–	–	–	–	–	–	–	1
	1215	25	5	–	–	–	–	–	–	–	–	–	30
	1310	9	1	–	–	1	1	–	–	–	–	–	12
	1340	4	–	–	–	–	–	–	–	–	–	–	4

TABLE 9.67 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Quartzite, Jasp.:	4000	2	2	–	–	–	–	1	–	–	–	–	5
	4001	1	–	–	–	–	–	–	–	–	–	–	1
	1501	2	–	–	–	–	–	–	–	–	–	–	2
	1502	1	–	–	–	–	–	–	–	–	–	–	1
Prov. Totals		194	24	4	3	5	1	1	0	0	0	0	232
PROVENIENCE 7													
Obsidian:	3523	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	4	1	–	–	–	–	–	–	–	–	–	5
	3700	6	1	1	–	–	–	–	–	–	–	–	8
	3050	5	–	–	–	–	–	–	–	–	–	–	5
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1053	3	2	–	–	–	–	–	–	–	–	–	5
	1091 1	1	–	–	–	–	–	–	–	–	–	–	1
	1215	1	–	–	–	1	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	–	–	–	–	–	–	1	–	–	–	–	1
	4001	1	–	–	–	–	–	–	–	–	–	–	1
Prov. Totals		24	4	1	0	1	0	1	0	0	0	0	31
PROVENIENCE 8													
Obsidian:	3520	23	5	–	–	1	–	–	–	–	–	–	29
	3523	19	2	4	–	–	–	–	–	–	–	–	25
	3524	1	1	1	–	–	–	–	–	–	–	–	3
	3525	3	1	1	–	–	–	–	–	–	–	–	5
	3530	30	4	2	–	–	–	–	–	–	–	–	36
Basalt:	3701	129	12	1	2	1	–	–	–	–	–	–	145
	3700	16	1	–	–	–	–	–	–	–	–	–	17
	3030	20	–	–	–	–	–	–	–	–	–	–	20
	3050	28	–	–	–	–	–	–	–	–	1	–	29
	3400	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1011	2	–	–	–	–	–	–	–	–	–	–	2
	1050	2	–	–	–	–	–	–	–	–	–	–	2
	1051	6	5	–	–	–	–	–	–	–	–	–	11
	1090	2	1	–	–	–	–	–	–	–	–	–	3
	1030	1	–	–	–	–	–	–	–	–	–	–	1
	1040	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	14	4	–	–	–	–	–	–	–	–	–	18
	1053	62	16	–	–	–	–	–	1	–	–	–	79
	1091	11	2	–	–	–	–	–	–	–	–	–	13
	1215	13	3	–	–	–	–	–	–	–	–	–	16
	1310	1	–	–	–	–	–	–	–	–	–	–	1
	1340	2	3	–	–	–	–	–	–	–	–	–	5
Silicified Wood:	1113	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	3	2	–	–	–	–	–	–	2	–	–	7
Prov. Totals		393	63	9	0	2	0	0	1	2	1	0	471

edges, while the remaining six edges were unretouched. The entire assemblage of edges exhibited considerable diversity in outline shape and wear pattern variability, indicating their use in a variety of activity specific contexts.

SUMMARY

LA 12494 exhibited three intact or partially intact hearths, and an additional seven probable loci of hearth construction and usage as monitored by high densities of firecracked rock, possible hearth constructional elements and (occasionally) charcoal stain. The site in general was characterized by extremely high densities of firecracked rock and lithic artifacts in comparison with other nonstructural site locations excavated within the Permanent Pool boundaries.

Dating

Despite the large number of ceramic fragments (155) recovered from the site location, the deposition of byproducts of hearth utilization and the vast majority of lithic artifacts can be attributed to the occupation of Late Archaic populations within the study area. With very few exceptions, ceramic fragments were found only upon the surface of the site, and the distribution of ceramic fragments by vessel exhibited no spatial covariation with particular provenience locales. One exception to this pattern was found in Provenience 2, which encompassed all ceramic fragments from a single Historic Period vessel.

With the exception of that vessel and single sherds from two additional Historic Period vessels, the remaining ceramic assemblage represented a variety of vessels manufactured during the P-III phase of the Anasazi Period. The close proximity of LA 12494 to LA 5014, a large P-III phase site situated directly north of LA 12494, may have resulted in deposition of P-III phase artifactual debris over much of the site location. Provenience locales of LA 12494 which were spatially closer to LA 5014 (Proveniences 5 and 6) exhibited substantially greater numbers of ceramic fragments than did provenience locales situated at greater distances from that site (Proveniences 1, 3, 4, 7 and 8).

Another, and better warranted line of evidence to assign a Late Archaic date of occupation for LA 12494 is found in obsidian hydration readings. A total of 10 obsidian artifacts from the uppermost 10cm levels of the site was subjected to obsidian hydration analysis. The adjusted mean value of these readings, based on a population of 6 artifacts, was 10.00 microns. In contrast to this, the adjusted mean values of readings for obsidian artifacts recovered from equivalent physical contexts within site locations dating the Anasazi Period within the project area range from 4.38 microns to 5.19 microns of hydration.

Although the population of obsidian artifacts from which such adjusted mean values have been derived is very small, and no hydration curve exists at present for the middle Rio Grande region through which absolute temporal parameters can be assigned to a site specific sample of hydration readings, it seems clear that the initial occupation of LA 12494 definitely predates the manufacture of Anasazi Period and Historic Period ceramics found across its surface.

Procurement, Processing and Consumption Activities

Direct evidence of species procured, presumably as food resources, is limited, but indicates that the overall procurement strategy was not highly focal in nature. Faunal species represented include freshwater mollusk, cottontail rabbit and deer. A single purslane seed from the hearth area of Provenience 2 comprised the only direct evidence of possible vegetative food resource procurement, although the extremely high numbers of manos and metates recovered throughout the site location indicate the possibility that floral seed producing species may have constituted a substantial proportion of foodstuffs procured.

The vast majority of massive implements across the site location were manos and metates which were presumably used in contexts of food preparation. Two manos exhibited hematite stains, as did one utilized edge of a chalcedony artifact, indicating an aspect of activity performance not directly related to food procurement or consumption.

With very few exceptions, milling implements were distributed within the near vicinity of intact hearths or hearth areas, which indicates that they may have been employed in "immediate" contexts of cooking activities.

Some diversity in specific hearth usage is indicated by the fact that three hearth areas were characterized by an absence of nearby milling implements. These include the hearth in Provenience 6, the hearth area in Provenience 7 (Feature 4), and the possible hearth area in the northern portion of Provenience 4. Other indications of diversity in specific kinds of cooking techniques are suggested by the absence of firecracked rock in association with two intact hearths; Feature 2 in Provenience 1 and Feature 3 in Provenience 4.

With the exception of Provenience 2, all provenience locales were characterized by some degree of debitage utilization, although only 71 such artifacts were recovered from the entire site location. Evidence of utilization or manufacture of at least 23 facially retouched implements is indicated across the site location, if each provenience locale is treated as a discrete unit of observation and the number of implements are then totaled. Of this projected number, only five implements were represented as whole or fragmentary artifacts, and the remainder are represented as retouch or resharpening flakes.

In general, utilized debitage assemblages recovered from Proveniences 1, 6 and 8 were characterized by considerable diversity in edge retouch, outline shape, angle and wear patterns; whereas assemblages recovered from Proveniences 3, 5 and 7 were characterized generally by utilized edges which were straight to convex in outline shape and exhibited wear patterns indicating a predominance of sawing utilization. The utilized debitage assemblage from Provenience 4, while characterized predominantly by straight and convex edges, exhibited a considerable number of such edges with relatively acute angles, a high degree of polish and striations indicating a scraping mode of utilization.

It thus seems clear that while some degree of differentiation in activity specific debitage utilization is indicated between different provenience locales, the magnitude of this differentiation is not great. All of the provenience locales are characterized by a relatively small number of tools, given the vast amount of debitage and small angular debris exhibited across the site as a whole.

LA 12495

Location and Physiographic Situation

LA 12495 is a late Archaic site located on the west side of the Rio Grande River in White Rock Canyon some 200 meters upstream from the mouth of Medio Canyon, at an elevation of 5300 ft. The site is situated on the southwest slope of a well stabilized dune, 75m north of the Rio Grande River, and 50m south of a steep talus slope leading to the canyon rim on the west side of the river. Dominant vegetation within the vicinity of the site location includes junipers, rabbitbrush and a sparse cover of grama grass.

LA 12495 may have been deposited contemporaneously with the occupation of LA 12494 (located between 10 and 15m to the east), but the distribution of firecracked rock and artifactual debris characterizing both site locations was not continuous throughout the locality, and for that reason two site locations were defined during survey. A recent erosional channel separates the two locations, which may have resulted in the destruction of any archeological remains once existing between the two sites.

Methodology of Excavation

The site location was initially gridded into 1.0m x 1.0m units, through extending the grid system used for LA 5014 and LA 12494. Surface collections were not taken, and each grid unit was excavated through stripping the upper 10cm of fill and screening through ¼ inch hardware cloth. Firecracked rock was weighed in kilograms by grid unit. A total of 71 grid units was excavated in this fashion, and an additional 8 grid units measuring 2m by 2m were excavated similarly near the extreme western portion of the site location.

PROVENIENCE 1

LA 12495 was defined during survey as a single provenience characterized by a scatter of firecracked rock and lithic artifactual debris. After analysis, two provenience locales were defined based upon relative densities of firecracked rock and lithic artifacts, as monitored by weight. Provenience 1 was encompassed by 22 1.0m x 1.0m grid units in the eastern portion of the site location.

Features

No intact structures or hearth features were defined during excavation, but evidence of hearth usage was recovered as a relatively high volume of firecracked quartzite and basalt in grid unit M62. Lesser volumes of firecracked rock were recovered from five other grid units, distributed as two small concentrations in grid units K64 and L65, and units K67, K68 and J68. No evidence of charcoal or burning was noted.

The total volume of firecracked rock amounted to 24kg, with a mean weight of 4.0kg per square meter within the six grid units encompassing firecracked rock, and 1.1kg per square meter overall.

Ceramic Artifacts

A single fragment of an 18th century carbon painted polychrome olla was recovered from grid unit L67.

Lithic Artifacts

Forty-two lithic artifacts were recovered from 15 of the 22 grid units comprising the provenience locale, thus exhibiting a mean frequency of 2.8 artifacts per square meter for those grid units encompassing artifacts, and 1.91 artifacts per square meter overall. The majority of lithic artifacts were pieces of debitage (74%) and metate fragments (12%). As monitored by weight, debitage and small angular debris were distributed sparsely over the provenience locale, with highest densities exhibited in grid unit J64. Fragments of three metates were found; one deep basin metate represented by three fragments in grid unit I68, a fragment of a shallow basin metate in grid unit J66, and a nearly complete slab metate in grid unit J65. A one-hand mano was recovered from grid unit J66 as well. Milling implements were thus distributed generally south and west of the major concentrations of firecracked rock within the provenience.

1. Material Selection

The majority of lithic artifacts was manufactured from basalt (50%, 4 taxons), followed by chalcedony (29%, 4 taxons) and obsidian (15%, 3 taxons). A single piece of chert, silicified wood and quartzite were recovered as well, for a total of 15 material taxons. With the exception of one piece of 3510 obsidian debitage, all materials represented are available within the study area.

2. Manufacture

No cores, large angular debris or hammerstones were recovered within the provenience locale, and none of the material taxons exhibited debitage or small angular debris in frequencies substantial enough to suggest that either primary or secondary stages of artifact manufacture had been routinely undertaken within the provenience locale.

3. Tool Utilization

Milling activities are represented by fragments of three metates and a one-hand mano. No hammerstones or massive processing implements such as choppers or utilized cores were recovered, and no facially retouched artifacts, retouch flakes or resharpening flakes were found.

Utilization of debitage was represented by only three flakes, each of which exhibited a single utilized edge characterized by wear patterns indicative of scraping. One of those edges was unidirectionally retouched, and the other two were unretouched.

PROVENIENCE 2

Provenience 2, as analytically defined, is the western portion of the site location. A total of 49 square meters of the provenience were excavated as 1.0m x 1.0m grid units, and an additional 32 square meters were excavated as 2m x 2m grid units. Z-score distributions of firecracked rock and debitage weight densities were computed independently for the population of 1m x 1m grid units and the population of 2m x 2m grid units. In order to visually illustrate the structure of deposition within the provenience locale, however, the accompanying site map has been drawn as if both populations of grid units were characterized by the same mean and standard deviation of firecracked rock and debitage weight values.

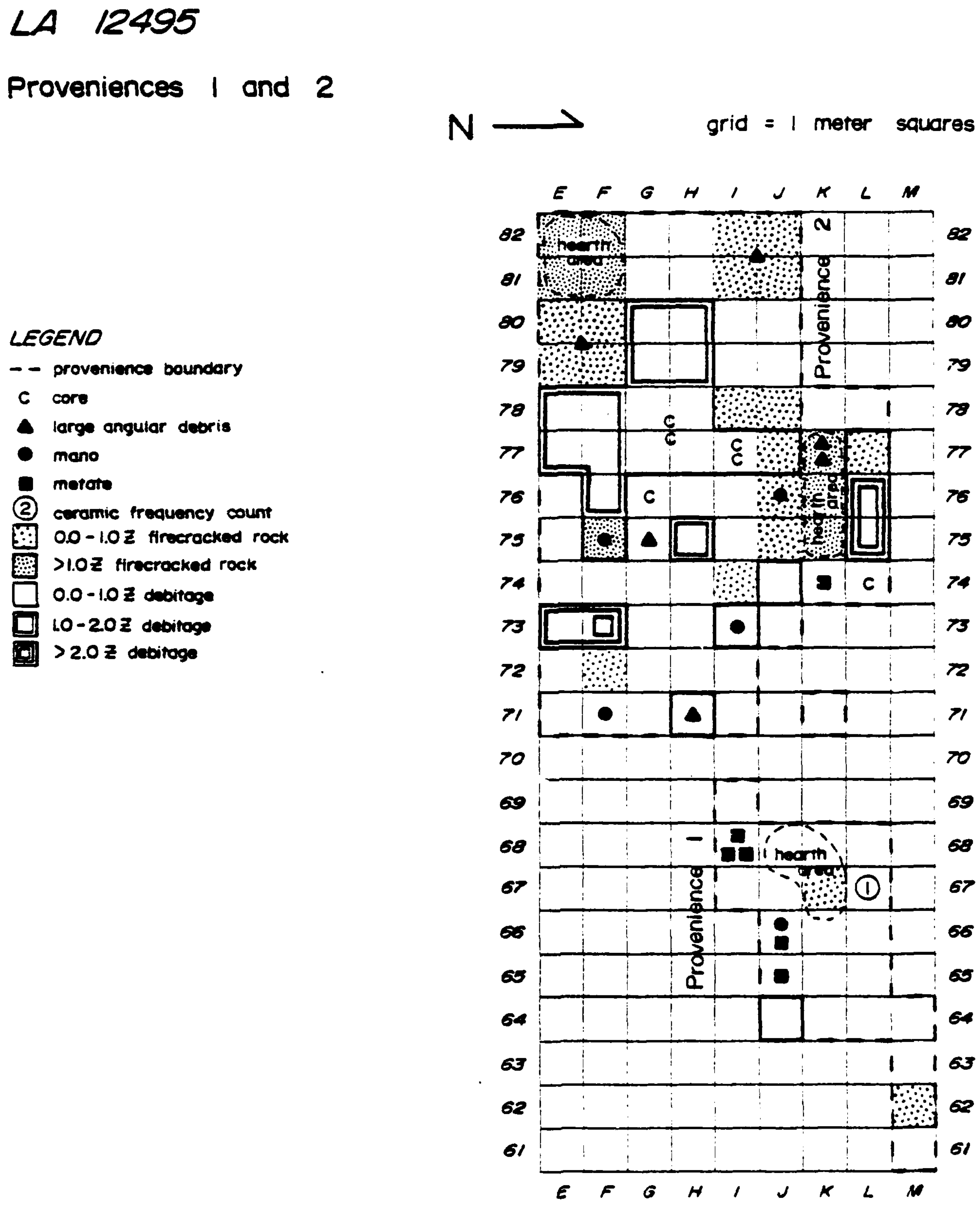


FIG. 9.50 LA 12495—Proveniences 1 and 2

Features

Although no intact hearth facilities were encountered during excavation, three areas within the provenience exhibited densities of firecracked rock and occurrence of basalt clasts or slabs which indicate the possibility of hearth construction and usage. The most extensive distribution of firecracked rock was situated in the north central portion of the provenience, and was characterized by highest relative density of firecracked rock in grid units K75, K76, and K77. Several large basalt clasts and slabs were encountered in the vicinity of this concentration.

A second hearth location in the southeastern portion of the provenience is indicated by relatively high densities of firecracked rock in grid units F72 and F75, and by the presence of possible hearth construction elements in grid units E74, F72, and F75.

A third hearth location in the extreme southwestern part of the provenience is indicated by relatively high densities of firecracked rock and possible hearth elements in grid units E79-82 and F79-82. These grid units were excavated as two 2m x 2m squares.

No physical evidence of burning in the form of ash, charcoal or charcoal stains was observed within any of these locales.

Firecracked rock was recovered from 39 of the 49 1.0m x 1.0m grid units and six of the eight 2m x 2m grid units excavated within the provenience. Mean weight within those grid units encompassing firecracked rock was 3.9kg per square meter, or 3.0kg per square meter for the entire provenience.

Ceramic Artifacts

No ceramic fragments were recovered from within the provenience.

Lithic Artifacts

A total of 448 lithic artifacts was recovered from 45 of the 49 1.0 x 1.0m grid units, and from all of the eight 2.0m x 2.0m grid units comprising the provenience locale, resulting in a mean frequency of 5.79 artifacts per square meter within those grid units exhibiting artifacts, and of 5.31 artifacts per square meter overall.

Debitage and small angular debris were distributed in greatest density in several localities which were generally situated adjacent to the two major concentrations of firecracked rock.

1. *Material Selection*

Of the 446 lithic artifacts recovered, the majority were manufactured from basalt (54%, 4 taxons), followed by chalcedony (25%, 8 taxons), obsidian (10%, 5 taxons) and chert (7%, 5 taxons). An additional nine artifacts were manufactured from quartzite (2 taxons), two from jasperoid (1 taxon), two from sandstone (2 taxons) and one from metarhyolite (1 taxon).

With the exception of four pieces of 3510 obsidian debitage, all lithic materials are available within the study area. Ninety-five percent of cortical surfaces exhibited by basalt debitage were waterworn, which indicates that basaltic raw materials may have been selected predominantly from cobble beach areas within the immediate vicinity of the site location. Neary all taxons of chert and chalcedony are potentially available in Totavi Lentil deposits nearby the site location as well.

2. **Manufacture**

Six material taxons were characterized by debitage and small angular debris in substantial enough frequency to indicate their manufacture within the provenience locale itself. These included one taxon of obsidian (3530), two taxons of basalt, (3701, 3050), two taxons of chalcedony (1091, 1215), and one taxon of chert (1090).

Cortical debris comprised between 35% and 45% of debitage generated from obsidian, basalt and chalcedony materials, and no retouch or resharpening flakes were present in the entire assemblage from the provenience locale. Larger by-products of manufacture were evident predominantly for the basalt taxons as four cores and one piece of large angular debris, although a core of 1215 chalcedony and a piece of large angular debris of 1090 chert were present as well. It can be suggested that primary stages of reduction of several unaltered raw material taxons were undertaken within the provenience locale, and that little evidence exists which indicates that tertiary stages of reduction for manufacture of facially retouched artifacts were undertaken.

3. **Tool Utilization**

Milling activities are represented by a shallow basin metate located in grid unit K74, a single one-hand mano and three mano fragments of indeterminate shape located in the central and eastern portions of the provenience. Utilization of other more massive processing tools is indicated only through one core in grid unit I77 which exhibited evidence of battering wear along one edge.

No facially retouched artifacts or fragments were found, and no retouch or resharpening flakes from such implements were found.

Other evidence of tool utilization was observed as 25 pieces of debitage exhibiting a total of 32 utilized edge perimeters. These tools were manufactured from basalt (16 artifacts, 22 edges), obsidian (7 artifacts, 8 edges), and chalcedony (2 artifacts, 2 edges). With the exception of two unidirectionally retouched obsidian edges, all edges were unretouched.

Considerable diversity in edge outline shape is apparent among edges of all materials, although no projections were present in the assemblage. Nonsinuous, straight and convex edges comprised the majority of outline shapes, however.

All of the obsidian edges, and 12 of the 22 basalt edges exhibited wear patterns indicative of scraping utilization upon media which resulted in no production of polish. Eight of the basalt edges exhibited rounding and polish indicative of sawing utilization, and two had been employed for scraping which resulted in flattened and polished edge perimeters. The edges of both chalcedony tools exhibited no polish and bidirectional step fracture.

SUMMARY

LA 12495 is a nonstructural site characterized by four possible hearth areas which may date to the Late Archaic or Early Basketmaker phase of the Archaic Period.

TABLE 9.68
LA 12495–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3523	3	–	–	–	–	–	–	–	–	–	–	3
	3530	1	–	–	–	–	–	–	–	–	–	–	1
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	11	–	–	–	1	–	–	–	–	–	–	12
	3050	1	1	–	–	–	–	–	–	–	–	–	2
	3430	–	–	–	–	–	–	–	–	1	1	–	2
	3432	–	–	–	–	–	–	–	–	–	3	–	3
Chert:	1051	1	–	–	–	1	–	–	–	–	–	–	2
Chalcedony:	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	6	–	–	–	–	–	–	–	–	–	–	6
	1215	4	–	–	–	–	–	–	–	–	–	–	4
	1214	–	–	–	–	2	–	–	–	–	–	–	2
Silicified Wood:	1140	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	1	–	–	–	–	–	–	–	–	–	–	1
Other Material:	9999	–	–	–	–	–	–	–	–	–	1	–	1
Provenience Totals:		31	1	0	0	4	0	0	0	1	5	0	42
PROVENIENCE 2													
Obsidian:	3520	2	–	–	–	–	–	–	–	–	–	–	2
	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3525	2	–	–	–	–	–	–	–	–	–	–	2
	3530	33	1	–	–	–	–	–	–	–	–	–	34
	3510	4	–	–	–	–	–	–	–	–	–	–	4
Basalt:	3701	165	16	–	2	1	–	–	–	–	–	–	184
	3030	5	–	–	–	–	–	–	–	1	–	–	6
	3050	40	6	–	4	–	–	–	–	1	–	–	51
	3430	–	–	–	–	–	–	–	–	2	–	–	2
Chert:	1050	1	1	–	1	–	–	–	–	–	–	–	3
	1051	5	–	–	–	1	–	–	–	–	–	–	6
	1070	4	–	–	–	–	–	–	–	–	–	–	4
	1090	18	–	–	–	1	–	–	–	–	–	–	19
	1060	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	–	1	–	–	–	–	–	–	–	–	–	1
	1053	7	2	–	–	–	–	–	–	–	–	–	9
	1091	23	5	–	–	–	–	–	–	–	–	–	28
	1212	1	–	–	–	–	–	–	–	–	–	–	1
	1214	3	2	–	–	2	–	–	–	–	–	–	7
	1215	55	3	–	1	–	–	–	–	–	–	–	59
	1310	4	–	–	–	–	–	–	–	–	–	–	4
	1340	2	–	–	–	–	–	–	–	–	–	–	2
Silicified Wood:	1112	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	6	2	–	–	–	–	–	–	–	–	–	8
	4001	1	–	–	–	–	–	–	–	–	–	–	1
	1501	2	–	–	–	–	–	–	–	–	–	–	2
	1502	1	–	–	–	–	–	–	–	–	–	–	1
Sandstone:	2000	–	–	–	–	1	–	–	–	–	–	–	1
	2010	–	1	–	–	–	–	–	–	–	–	–	1
Other Material:	9999	–	–	–	–	–	–	–	–	–	1	–	1
Provenience Totals:		389	40	0	8	6	0	0	0	4	1	0	448

Two fragments of two different ceramic vessels were recovered from the site, one of which was manufactured during the Anasazi Period, the other of which may have been manufactured during the Historic Period. The site contained no charcoal suitable for C-14 dating, and none of the obsidian artifacts recovered from the site were subjected to hydration analysis. LA 12495 is situated nearby LA 12494, a Late Archaic site, and may well represent a relatively contemporaneous occupation of the general physiographic situation within which both site locations are found.

None of the hearth areas within LA 12495 exhibited evidence of intact hearth facilities, but all were characterized by the presence of firecracked quartzite cobbles and basalt, and some larger basalt slabs and clasts which may represent eroded or deflated remnants of such facilities.

Excavation resulted in no direct evidence indicating the kind of floral or faunal species which may have been procured or processed for consumption at the site.

Whole or fragmentary milling implements recovered were situated either within or immediately adjacent to three of the presumed hearth areas, however, which may indicate that floral seed bearing species constituted one set of that procurement strategy.

Two general localities of activity performance within the site location were defined. The westernmost locality (Provenience 1) was characterized by evidence of a single hearth facility, relatively low volumes of firecracked rock presumably generated through usage of that hearth, and with the exception of milling implements, very low frequencies of artifacts resulting from either tool manufacture or tool use within the vicinity of the hearth.

The easternmost locality (Provenience 2) was characterized by firecracked rock and possible hearth element concentrations indicating the presence of three hearth facilities, each of which appeared to have been associated with at least one high density concentration of artifactual debris generated through tool manufacture and usage. Milling implements were situated within or adjacent to two of those hearth areas.

The range of functionally specific activities for which silicious tools were employed within the provenience locale was rather diverse, as indicated by variability in material from which tools were manufactured, edge outline shape, edge angle and the kinds of wear patterns exhibited upon utilized edges. It is entirely possible, however, that much of this diversity can be attributed to "noise" imposed by the analytical definition of the assemblage. Although three spatially distinct high density concentrations of debitage were isolated within the provenience, all three were combined into a single analytical unit for purposes of comparative analysis. The degree to which utilized tools situated nearby any given hearth area within the provenience might exhibit morphological or wear pattern variability indicative of particular usages is thus unknown at present. A consideration of this general problem is treated in the initial chapters of this volume.

The artifact assemblage from Provenience 2 is as well characterized by substantial evidence of debitage manufacture, both in the form of large by-products of tool manufacture evidenced as cores and large angular debris, and as large numbers of debitage and small angular debris generated through reduction of a variety of material taxons. Cortical debris generated through reduction within the provenience was relatively high in frequency, and no evidence of tertiary manufacture in the form of retouch or resharpening flakes was apparent. It can thus be suggested that the volume and spatial distribution of debitage and small angular debris found within Provenience 2 was a function of primary manufacture of raw materials, presumably undertaken either wholly or in part for purposes of generating artifacts suitable for usage "on the spot" within the provenience.

LA 12496

Location and Physiographic Situation

LA 12496 is a Late Archaic site located on the west side of the Rio Grande River in White Rock Canyon, 400m upstream from the mouth of Medio Canyon. The site is situated at an elevation of 5320 ft at the base of a steep talus, 3100m from the river's edge. Land surface upon which the site is located slopes to the southwest, and is at present undergoing erosion, as evidenced by a network of small erosional drainages which dissect the entire site area.

LA 12496 is located northeast and nearly adjacent to LA 5014, an Anasazi P-III phase site, and lies approximately 60m east of LA 12494 and LA 12495, two Archaic Period site locations. LA 12496 may have been occupied contemporaneously with LA 12494 and LA 12495.

Vegetation in the vicinity of LA 12496 can be characterized as the Upper Sonoran Juniper vegetative community, and dominant species include junipers, rabbitbrush, snakeweed, occasional prickly pear cactus, and sparse grasses.

Methodology of Excavation

LA 12496 was documented as a single provenience during survey. It encompassed 1800 square meters of land surface and exhibited possible evidence of several eroded hearth structures, firecracked cobbles, shallow basin metates, and varying densities of lithic artifactual debris.

Recent erosion was evident over a substantial portion of the site area, generally taking the form of small drainage channels varying in depth from 10cm to as much as 1.5m from adjacent relatively stable land surfaces. Much of the artifactual debris and evidence of hearth construction and usage such as hearth elements and firecracked cobbles were distributed adjacent to and partially within these erosional channels.

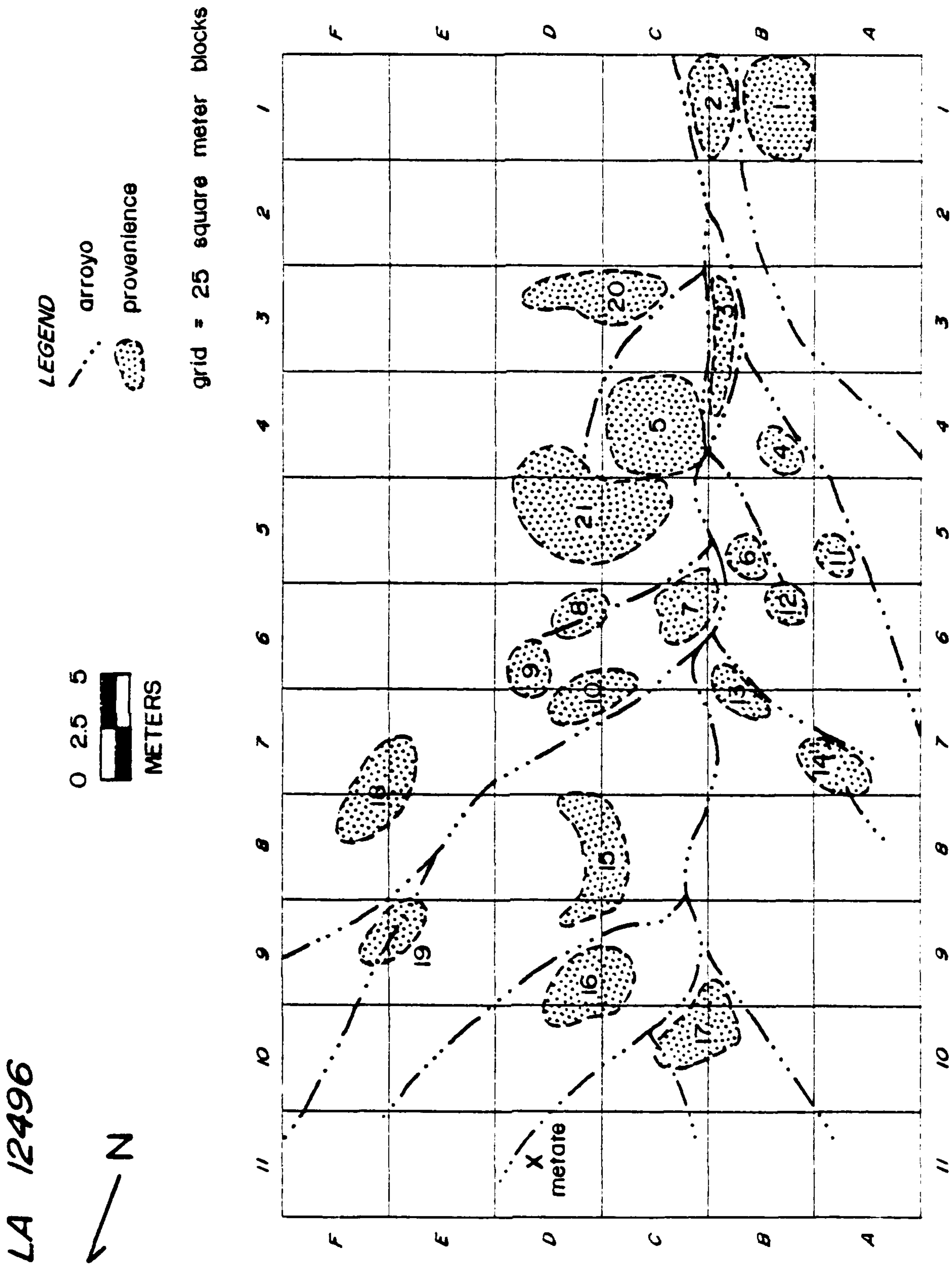


FIG. 9.51 LA 12496—Site Map

A 5m x 5m grid was superimposed over the site area for purposes of documentation. Localities within the site area, which were characterized by possible hearth structures, distributions of firecracked cobbles, or lithic artifactual debris, were then defined as provenience locales. Each locale was mapped and described; artifactual debris were collected as a unit, firecracked cobbles were weighed as a unit, and small test trenches were sunk when deemed necessary to gather information concerning stratigraphy or deposition or presence of subsurface features or artifactual debris.

A total of 21 provenience locales was documented in this fashion. Much of the descriptive information concerning these proveniences has been presented in tabular form. The following discussion will provide an overview of the site location as a whole, and will then summarize the artifactual variability recovered from each provenience.

Stratigraphy

LA 12496 is situated upon a soil substrate comprised of two lenses: an upper red, consolidated sand lens which is overlaid in some areas with a recently, relatively unconsolidated aeolian sand; and a lower consolidated gray lens. Although the site area is dissected through erosion, it was clear that all cultural remains had been deposited upon the original surface of the upper red lens, although in many cases this lens had eroded. The dates of geological deposition of the soil lenses are unknown at present, but similar stratigraphic deposition has been observed in other places along the banks of the Rio Grande in White Rock Canyon, and both soils have been attributed in formation to the Holocene (Warren 1976).

Features

Of the 21 provenience locales documented, six exhibited concentrations of basalt clasts which may represent hearth facilities. All of these proveniences exhibited varying densities of firecracked quartzite cobbles in the vicinity of the clast concentrations, and an additional seven proveniences were characterized by general scatters of clasts and/or firecracked cobbles. These latter provenience locales may have been sites of hearth construction and use, but exhibited no clear evidence of hearth facilities *per se*.

An additional eight proveniences exhibited either no evidence of hearth construction and usage, or minimal numbers of firecracked rock fragments.

Three partially intact hearth features were tested through subsurface excavation, and only one of those (situated in Provenience 21) exhibited good evidence of fire activity. The hearth structures were constructed as roughly circular arrangements of basalt clasts. Those partially intact ranged in interior diameter from 1.7m to 1.8m. Areal extent of firecracked rock distributions ranged from four square meters to 30 square meters, but tended to be restricted to four to six square meters in most cases where the scatters were situated on land surfaces adjacent to drainage channels.

Ceramic Artifacts

Six ceramic fragments were recovered from six different provenience locales at the site location. The fragments represented a minimum of four different vessels, and dated in manufacture to both the P-III and P-IV phases of the Anasazi Period. It is presumed that their deposition upon the site location postdated the major occupation of the site.

Lithic Artifacts

Lithic artifacts were distributed very sparsely within provenience locales. Only six of the 21 proveniences exhibited more than 15 artifacts. Of those, only five exhibited more than ten pieces of debitage or small angular debris from a single material taxon. The remaining proveniences exhibited between three and 13 lithic artifacts each.

Because of the relative paucity of artifacts recovered, the following summary will discuss material selection, manufacture and usage of lithic artifacts for the site as a whole, with reference to assemblages recovered from particular proveniences where appropriate.

1. Material Selection

Of the 407 lithic artifacts recovered from the entire site location, 43% (5 taxons) were manufactured from obsidian, 40% (3 taxons) from basalt, 11% (5 taxons) from chalcedony, and 3% (3 taxons) from chert. An additional eight artifacts were manufactured from one taxon of quartzite, and five artifacts were manufactured from one jasperoid taxon. With the exception of a single taxon of obsidian (3510) which was represented by ten pieces of debitage found across several provenience locales, all materials were available within the study area, and many within the immediate vicinity of the site location itself.

2. Manufacture

Evidence of tool manufacture throughout the site location was rather limited in nature, in that only two material taxons were represented by substantial numbers of debitage and small angular debris. Only five provenience locales exhibited more than ten pieces of debitage or small angular debris generated from single material taxons, and larger by-products of manufacture included a total of only three cores, ten pieces of large angular debris, and a single hammerstone for the entire site location. Although the majority of debitage and small angular debris was manufactured from a single taxon of obsidian and a single taxon of basalt, the cores and large angular debris were predominantly of basalt, chalcedony and quartzite taxons for which debitage and small angular debris occur in very low frequencies.

Both basalt and obsidian assemblages were characterized by relatively low numbers of artifacts exhibiting cortical surfaces (17% and 16% respectively), and fully 18% of the obsidian debitage exhibiting platforms were characterized by prepared platforms indicative of tertiary stages of reduction.

It can thus be suggested that the amount of primary reduction of unaltered raw material undertaken within the site location was limited in nature, and restricted to a few number of material taxons. Two material taxons, 3530 obsidian and 3700 basalt appear to have been imported to the site location in predominantly decorticated form, and considerable evidence of tertiary reduction of 3530 bifaces is evident as a relatively high percentage of prepared platforms exhibited by debitage of

that material.

3. **Tool Utilization**

No massive processing implements such as choppers or utilized cores were recovered. Milling activities, however, were represented by ten shallow basin metates at seven provenience locales (Including Proveniences 1, 5, 7, 8, 9, 17 and 19) and an additional metate in grid unit D11. A single quartzite one-hand mano was found in association with three metates within Provenience 17, and a fragment of quartzite exhibiting a ground facet was recovered from Provenience 6 as well.

Metates were found within only three of the seven proveniences exhibiting evidence of hearth construction or usage (Proveniences 7, 8, 9), although the three metates found within Provenience 17 may have been associated with evidence of hearth utilization in the adjoining Provenience 16. Striations exhibited on the grinding surfaces of the metates and the single mano indicated that the implements had been used in a reciprocal rather than rotary fashion.

Six fragments from a minimum number of three obsidian and two basalt bifaces were recovered from Proveniences 5, 7, 13, 16, 18 and 21; and a triangular unifacially retouched scraper was recovered from Provenience 10. With the exception of one basalt biface fragment which exhibited wear patterns indicative of sawing usage, all biface fragments exhibited at least one edge characterized by perpendicular step fracture indicative of transverse scraping utilization.

A total of two retouch flakes and 34 resharpening flakes for a minimum number of six bifacially retouched implements was recovered from seven provenience locales (2, 5, 8, 10, 18, 20, 21). Of these, only Provenience 5 exhibited a biface fragment of the same material taxon as those of the retouch or resharpening flakes within the provenience locale, and manufacture or usage of three implements is indicated through flakes exhibiting prepared platforms which are not represented through fragments of the implements themselves.

Evidence of utilization was observed across 21 edges of 19 pieces of debitage, the majority of which (14 edges, 13 artifacts) were obsidian. Few utilized flakes were found at any given provenience locale, and occurrences were recovered from only eight proveniences (Proveniences 4, 5, 7, 8, 9, 16, 20, 21). Of the 21 edges exhibiting evidence of utilization, 17 were either unidirectional or bidirectionally retouched. Wear patterns exhibited by all edges were predominantly indicative of transverse scraping usage, like wear patterns exhibited by biface fragments.

SUMMARY

Although the extremely eroded surface conditions characteristic of the vicinity of LA 12496 limited the kinds of analysis of intrasite distribution of artifactual remains which might otherwise be productively employed, it seems clear from the physical evidence that the site was originally comprised of at least six hearth facilities.

The kinds of cooking or processing undertaken through usage of these facilities apparently involved utilization of rock heat retainers, and associated tool usage involved milling activities and scraping activites employing predominantly obsidian artifacts exhibiting retouched edge perimeters.

The debitage assemblage for the entire site location exhibits minimal evidence of primary reduction of unaltered raw material, and considerable evidence that materials from which debitage was manufactured were imported to the site location in a partially reduced state. Evidence suggests as well that bifacially manufactured implements were imported to the site location and used, in that both fragments of the tools themselves and resharpening flakes detached from such tools indicate usage of a minimum number of eight bifaces.

TABLE 9.69

LA 12496—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 1													
Obsidian:	3530	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	1	1	–	–	–	–	–	–	–	–	–	2
	3030	–	–	–	–	–	–	–	–	–	1	–	1
	3050	1	–	–	–	–	–	–	–	–	1	–	2
Chalcedony:	1091	1	–	–	–	–	–	–	–	–	–	–	1
	1215	1	1	–	–	1	–	–	–	–	–	–	3
Provenience Totals:		5	2	0	0	1	0	0	0	0	2	0	10
PROVENIENCE 2													
Obsidian:	3526	–	–	1	–	–	–	–	–	–	–	–	1
	3530	1	–	–	–	–	–	–	–	–	–	–	1

TABLE 9.69 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Basalt:	3700	2	–	–	–	–	–	–	–	–	–	–	2
	3030	2	–	–	–	–	–	–	–	–	–	–	2
	3050	–	–	–	–	1	–	–	–	–	–	–	1
Chalcedony:	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1215	–	1	–	–	2	–	–	–	–	–	–	3
Quartzite, Jasp.:	4000	–	–	–	1	1	–	–	–	–	–	–	2
Provenience Totals:		7	1	1	1	4	0	0	0	0	0	0	14
PROVENIENCE 3													
Obsidian:	3530	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	2	1	–	–	1	–	–	–	–	–	–	4
Chalcedony:	1215	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		4	1	0	0	1	0	0	0	0	0	0	6
PROVENIENCE 4													
Obsidian:	3530	1	–	–	–	–	–	–	–	–	–	–	1
	3510	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3700	–	2	–	–	–	–	–	–	–	–	–	2
	3030	1	1	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1091	1	1	–	–	–	–	–	–	–	–	–	2
	1215	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	–	1	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		6	5	0	0	0	0	0	0	0	0	0	11
PROVENIENCE 5													
Obsidian:	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3526	1	–	–	–	–	–	–	–	–	–	–	1
	3530	16	–	3	–	–	–	–	1	–	–	–	20
	3510	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3700	4	1	–	–	–	–	–	–	–	–	–	5
	3030	1	–	–	–	–	–	–	–	–	–	–	1
	3050	1	1	–	–	–	–	–	–	–	–	–	2
Chert:	1090	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1215	1	2	–	–	–	–	–	–	–	–	–	3
Provenience Totals:		30	4	3	0	0	0	0	1	0	0	0	38
PROVENIENCE 6													
Basalt:	3700	1	2	–	–	–	–	–	–	–	–	–	3
Chert:	1090	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	4000	–	1	–	–	–	–	–	–	1	–	–	2
Provenience Totals:		2	3	0	0	0	0	0	0	1	0	0	6

TABLE 9.69 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 7													
Obsidian:	3523	2	1	–	–	–	–	–	–	–	–	–	3
	3530	1	–	–	–	–	–	–	–	–	–	–	1
	3510	1	–	–	–	–	–	–	–	–	–	–	1
	3526	–	–	–	–	–	–	–	1	–	–	–	1
Basalt:	3700	6	–	–	–	–	–	–	–	–	–	–	6
	3030	–	1	–	–	–	–	–	–	–	–	–	1
	3050	1	–	–	–	–	–	–	–	–	–	–	1
	3430	–	–	–	–	–	–	–	–	–	1	–	1
Chert:	1090	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	2	–	–	–	–	–	–	–	–	–	–	2
	1215	1	1	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	1501	–	1	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		17	4	0	0	0	0	0	1	0	1	0	23
PROVENIENCE 8													
Obsidian:	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3526	1	–	1	–	–	–	–	–	–	–	–	2
	3525	1	–	–	–	–	–	–	–	–	–	–	1
	3530	8	1	4	–	–	–	–	–	–	–	–	13
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	6	–	–	–	–	–	–	–	–	–	–	6
	3050	1	1	–	1	–	–	–	–	–	1	–	4
Chert:	1051	–	1	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1053	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	1501	1	2	–	–	–	–	–	–	–	–	–	3
Provenience Totals:		22	5	5	1	0	0	0	0	0	1	0	34
PROVENIENCE 9													
Obsidian:	3530	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3700	4	2	–	–	–	–	–	–	–	–	–	6
	3050	–	–	–	–	1	–	–	–	–	–	–	1
Chalcedony:	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	1	–	–	–	–	–	–	–	–	–	–	1
Other Material:	9999	–	–	–	–	–	–	–	–	–	1	–	1
Provenience Totals:		8	2	0	0	1	0	0	0	0	1	0	12
PROVENIENCE 10													
Obsidian:	3525	–	–	–	–	–	–	–	1	–	–	–	1
Basalt:	3700	1	–	–	–	1	–	–	–	–	–	–	2
	3030	–	1	–	–	–	–	–	–	–	–	–	1
	3050	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1053	–	–	1	–	–	–	–	–	–	–	–	1
	1091	–	1	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		3	2	1	0	1	0	0	1	0	0	0	8

TABLE 9.69 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 11													
Obsidian:	3530	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	4	–	–	–	–	–	–	–	–	–	–	4
Chalcedony:	1091	–	1	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		5	1	0	0	0	0	0	0	0	0	0	6
PROVENIENCE 12													
Obsidian:	3530	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	2	–	–	–	–	–	–	–	–	–	–	2
	3030	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		5	0	0	0	0	0	0	0	0	0	0	5
PROVENIENCE 13													
Obsidian:	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3530	1	–	–	–	–	–	–	1	–	–	–	2
Basalt:	3700	3	1	–	–	–	–	–	–	–	–	–	4
Provenience Totals:		5	1	0	0	0	0	0	1	0	0	0	7
PROVENIENCE 14													
Basalt:	3700	4	1	–	–	–	–	–	–	–	–	–	5
Chalcedony:	1091	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		5	1	0	0	0	0	0	0	0	0	0	6
PROVENIENCE 15													
Obsidian:	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3530	2	–	–	–	–	–	–	–	–	–	–	2
	3510	–	1	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	5	2	–	–	–	–	–	–	–	–	–	7
Chalcedony:	1053	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		9	3	0	0	0	0	0	0	0	0	0	12
PROVENIENCE 16													
Obsidian:	3523	2	–	–	–	–	–	–	–	–	–	–	2
	3530	4	–	–	–	–	–	–	–	–	–	–	4
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	9	2	–	–	–	–	–	1	–	–	–	12
	3030	1	–	–	–	–	–	–	–	–	–	–	1
	3050	2	–	–	1	–	–	–	–	–	–	–	3
Chert:	1051	1	1	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		21	3	0	1	0	0	0	1	0	0	0	26

TABLE 9.69 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
PROVENIENCE 17													
Basalt:	3700	2	–	–	–	–	–	–	–	–	–	–	2
	3030	–	–	–	–	–	–	–	–	–	1	–	1
	3050	1	–	–	–	–	–	–	–	–	1	–	2
	3430	–	–	–	–	–	–	–	–	–	1	–	1
Chalcedony:	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1091	2	–	–	–	–	–	–	–	–	–	–	2
Quartzite, Jasp.:	4000	–	–	–	–	–	–	1	–	1	–	–	2
Provenience Totals:		6	0	0	0	0	0	1	0	1	3	0	11
PROVENIENCE 18													
Obsidian:	3523	2	–	–	–	–	–	–	–	–	–	–	2
Basalt:	3700	2	2	2	–	–	–	–	–	–	–	–	6
	3050	–	–	–	–	–	–	–	1	–	–	–	1
Chalcedony:	1091	–	1	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		4	3	2	0	0	0	0	1	0	0	0	10
PROVENIENCE 19													
Basalt:	3050	–	–	–	–	–	–	–	–	–	1	–	1
Chert:	1090	1	–	–	–	–	–	–	–	–	–	–	1
Quartzite, Jasp.:	1501	–	–	–	–	1	–	–	–	–	–	–	1
Provenience Totals:		1	0	0	0	1	0	0	0	0	1	0	3
PROVENIENCE 20													
Obsidian:	3523	3	–	–	–	–	–	–	–	–	–	–	3
	3526	–	–	1	–	–	–	–	–	–	–	–	1
	3530	29	–	6	–	–	–	–	–	–	–	–	35
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	8	1	–	–	1	–	–	–	–	–	–	10
	3050	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	–	1	–	–	–	–	–	–	–	–	–	1
	1090	–	1	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1091	1	–	–	–	–	–	–	–	–	–	–	1
	1215	–	1	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		43	4	7	0	1	0	0	0	0	0	0	55
PROVENIENCE 21													
Obsidian:	3523	6	–	1	–	–	–	–	–	–	–	–	7
	3525	–	–	–	–	–	–	–	1	–	–	–	1
	3526	1	–	1	–	–	–	–	–	–	–	–	2
	3530	30	2	13	–	–	–	–	–	–	–	–	45
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3700	26	5	1	–	–	–	–	–	–	–	–	32
	3050	2	–	–	–	–	–	–	–	–	1	–	3
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
	1090	–	1	–	–	–	–	–	–	–	–	–	1

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Chalcedony:	1052	–	–	1	–	–	–	–	–	–	–	–	1
	1053	1	1	–	–	–	–	–	–	–	–	–	2
	1091	1	2	–	–	–	–	–	–	–	–	–	3
	1215	1	–	–	–	–	–	–	–	–	–	–	1
	1310	1	–	–	–	–	–	–	–	–	–	–	1
Provenience Totals:		71	11	17	0	0	0	0	1	0	1	0	101
D 11													
Basalt:	3050	–	–	–	–	–	–	–	–	–	1	–	1
E 16													
Sandstone:	2050	–	–	–	–	–	–	–	–	2	–	–	2

LA 12507

LA 12507 consisted of a rectangular surface structure (Room 1) with an associated artifact scatter which dated to the Spanish Colonial phase (ca. A.D. 1692-1821) of the Historic Period. The site was located on a flat alluvial fan directly down stream from the mouth of Bland Canyon about 50m from the western bank of the Rio Grande River, at an elevation of 5290 ft. LA 12507 was situated at the interface of an area of sand dunes to the northwest and alluvial flats to the south and east. Vegetation at this location included sparse cacti, grasses and snakeweed in the alluvial flats and rabbitbrush on the dune. It was located in the Juniper vegetative community.

Surface dimensions of the rubble mound were 5.5m x 3.3m. An arbitrary base line was established to bisect the structure. A trench was excavated along the exterior of the east wall of Room 1 exposing the southeast and east walls. A 1.0m x 1.0m test was also placed in the northeast interior corner of Room 1 to define the interior structural boundaries. Once the floor and walls were encountered, the fill was removed. Although two natural strata were defined, artifactual materials were recovered as a single unit (level 1) which encompassed the two natural strata.

Architecture

Room 1:

Shape: Rectangular surface structure.

Orientation: The long axis of the structure was 14.5 degrees east of true north.

Condition: The structure was not eroded or vandalized.

Interior Room Dimensions:

	Length	Width	Height
North	2.34m	.44m to .52m	.43m to .49m
South	2.30m	.44m to .60m	.38m to .41m
East	4.50m	.48m to .60m	.44m to .60m
West	4.56m	.48m to .62m	.33m to .35m

Walls: All four walls were of similar construction and are described together below.

Type of Elements: Approximately 95% of the wall matrix was composed of large basalt clasts. Other materials included river worn basalt clasts and red basalt. All materials were locally available.

Size of Elements: The mean size of the large elements was 36cm x 29cm. Average size of the smaller river worn elements was 30cm x 30cm.

Placement and Construction of Elements: Wall elements were laid horizontally with their long axes parallel to the long axis of the wall. Elements were overlapping and dry laid.

Shaping of Elements: Unmodified.

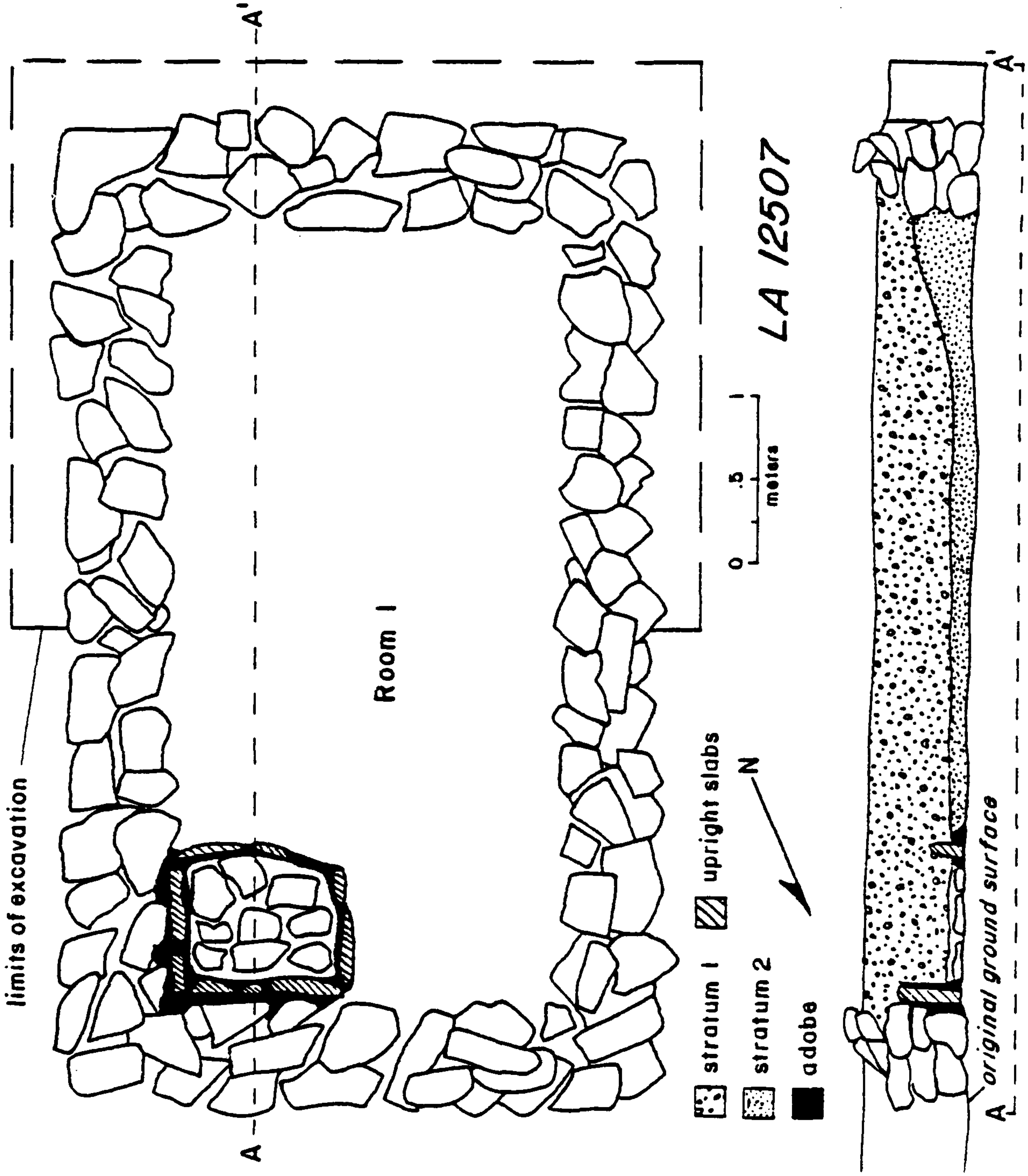


FIG. 9.52 LA 12507—Room 1, plan view and cross section

Wall Facing: Elements were not placed so as to create flat wall faces.

Courses: The walls were two elements wide and unevenly coursed.

Chinking: No chinking was present.

Corners: All corners were interlocking.

Plaster: No plaster was present.

Entrances: No entrances were found.

Floors: The floor was not well defined. An ash stained, hard-packed soil, 5cm thick, was found in the northeast quadrad of the room. The floor was not excavated into the ground surface.

Roofing: No evidence of roofing was found.

Interior Features:

Hearth: A rectangular, slab lined hearth measuring 85cm long by 75cm wide was found in the northeast corner of Room 1. The north interior hearth was comprised of three large upright slabs. The east wall was one upright slab with two horizontally placed stones on top of it. Elements were set in adobe. The south and west walls of the hearth were formed by laying smaller elements in adobe to enclose the hearth. The bottom of the hearth was comprised of several horizontally laid stones placed at floor level. One bone fragment was found in the hearth fill.

Room Fill: Two natural strata were defined through excavation of room fill. Layer 1 was a light brown sand mixed with some charcoal and rubble. This deposit included from surface to a range between 24cm and 43cm in depth. The second stratum was characterized by a series of varve-like layers of brown sand and continued to a depth of 60cm. Cultural material was recovered as one unit (level 1) and included sherds, lithics, bone and metal fragments.

Rubble: Approximately 5 cubic meters of wall rubble were recovered from within and without the room.

Exterior Fill: A 34cm trench was excavated around the southern half of the structure. Light brown sands similar to the interior room fill was found. Cultural materials recovered included sherds, bone and lithics.

Exterior Features: No exterior features were found.

Artifactual Assemblages

Although two natural strata were defined in Room 1, the cultural material was recovered as a single arbitrary unit (level 1). Aside from one bone fragment, which was recovered from the hearth, no cultural materials were isolated in direct contact with the occupation floor or features. Cultural material recovered from the interior fill included ceramics, lithics and bone, including a bone tool.

Ceramic Artifacts

Forty-three sherds or 93% of the total number of ceramics from LA 12507 were recovered from Room 1. A minimum of six vessels were represented in the room fill, including four Ogapoge Polychrome bowls, one Puname Polychrome olla and one Plain utility jar. Only two of the Ogapoge Polychrome vessels were represented by more than one sherd.

One rim of one Ogapoge Polychrome bowl had a small stylized bird in carbon paint, similar in execution to an anthropomorphic figure on a vessel found in the historic rooms at Pueblo del Encierro (LA 70). The historic component at LA 70 has been dated to the second half of the 18th century (Robinson *et al.* 1972). The temper from three of the Ogapoge Polychrome bowls and the Puname Polychrome olla suggest that they were manufactured in the northern Tewa and Zia village areas, which also suggests an early to middle 18th century date of occupation (Warren 1974:Fig. 20). Only two vessels, one with crystal pumice temper and another with glassy andesite temper, suggest local manufacture.

TABLE 9.70

CERAMIC TYPE AND TEMPER VARIABILITY

Ceramic Type and Form	Temper	Room 1 Level 1	Exterior Trench
Ogapoge Polychrome carinated bowl	vitric tuff (Nambe?)	7	–
carinated bowl	vitric tuff (N. Rio Grande)	32†	4†
hemispherical bowl	vitric tuff (Nambe?)	1	–
Puname Polychrome olla	diabase basalt	1	1
Polished Redware olla	vitric tuff (N. Rio Grande)	–	1
Plain Utility jar	glassy andesite	1	–
TOTAL		43	6

† probably same vessel

Lithic Artifacts

A total of five lithic artifacts was recovered from the fill in Room 1. These included a uniface, two pieces of debitage, one piece of small angular debris and one retouch flake. With the exception of one piece of chert debitage, the remaining artifacts were manufactured from a single chalcedony taxon (1215). Both materials are available within the near vicinity of the site location.

From the small number of artifacts recovered, little can be concluded about the reduction techniques employed at the site. One retouch flake suggests the possible manufacture of a facially retouched artifact. Only one piece of debitage or small angular debris exhibited a cortical surface.

None of the debitage or small angular debris edges exhibited utilization. The single uniface, however, did exhibit use.

TABLE 9.71

LA 12507–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, LEVEL 1													
Chert:	1050	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1215	1	1	1	–	–	–	–	1	–	–	–	3
Room Totals:		2	1	1	0	0	0	0	1	0	0	0	5
EXTERIOR TRENCH													
Chalcedony:	1214	1	–	–	–	–	–	–	–	–	–	–	1
Trench Totals:		1	0	0	0	0	0	0	0	0	0	0	1

Bone Artifacts

One Artiodactyla long bone shaft fragment (37mm x 20mm x 13mm) was selected for utilization. It was a Class 2b tool with a highly concave edge which exhibited rounding and polish. The striations were parallel to the longitudinal axis of the fragment. Frison (1970:27) attributes this kind of wear to the skinning process, while Sperry (1968:66) suggests their use as "fleshers."

Fauna

1. Minimum Number of Individuals

Three individuals were represented in the faunal remains recovered from LA 12507. One domestic sheep or goat, one medium-sized mammal and one fish were identified. The presence of *Ovis* spp./*Capra* spp. remains in Room 1 suggest that domestic animals were consumed. The fish bones were also recovered from Room 1, indicating the use of aquatic resources. Harris (1968:202) has suggested that fish bones decompose more rapidly than other bones, making estimates of dependence upon fish resources difficult. It is evident that both domestic and nondomestic resources were utilized.

2. Age of Animals

Ovis spp./*Capra* spp.	1	Immature
Medium (cottontail size)	1	Adult
Fish	1	Unknown

3. Butchering Strategy

Meat Packages

The butchering strategy for *Ovis* spp./*Capra* spp. can be seen once overlapping species taxons are consolidated. Although pelvis, mandible and upper leg elements were not represented, vertebrae, skull, lower leg, rib and scapula element presence indicate that both high and low muscle mass meat packages were represented. The presence of both high and low muscle mass meat packages suggests that the animal was butchered and consumed at the site.

Marrow Cracking

Of 21 identifiable bone fragments recovered from LA 12507, five (24%) were long bone shaft fragments. This percentage indicates that marrow extraction was practiced, but sample size limits discussion on the intensity of marrow extraction employed.

4. Butchering Cut Marks

One large mammal rib blade fragment exhibited a Type 3 cut mark. It appears to have been sawed, but whether the saw was metal or stone could not be determined (see Fig. III.6.3 in Chapter 6). The cut is fairly straight, but seems to have been snapped. A definite identification could not be made.

Exterior Trench

A 34cm wide test trench was excavated around the southern exterior of Room 1. Although few ceramics and lithics were recovered during this test, the materials were separated analytically from the interior fill of the room.

Ceramic Artifacts

A total of six sherds were recovered from the trench. With the exception of one polished redware olla sherd, the other sherds could have been parts of vessels found in the fill of Room 1. The vitric tuff temper of the redware sherd suggest its probable manufacture in one of the northern Rio Grande Tewa villages.

Lithic Artifacts

A single piece of 1214 chalcedony debitage with waterworn cortex was recovered from the test trench. This flake exhibited no utilization.

SUMMARY

The construction and occupation of LA 12507 can be dated ceramically to the Spanish Colonial phase of the Historic Period. Architectural facilities were re-

TABLE 9.72

MEAT PACKAGES AND LONG BONE SHAFT FRAGMENTS
FOR MINIMUM NUMBER OF INDIVIDUALS

		ELEMENTS REPRESENTED								
		LOW MUSCLE MASS					HIGH MUSCLE MASS			
TAXON	MINIMUM NUMBER OF INDIVIDUALS	Vertebrae	Pelvis	Skull	Mandible	Lower Leg	Ribs	Scapula	Upper Leg	LONG BONE SHAFT FRAGMENTS
Ovis spp./*Capra* spp.	1					3				
Medium Mammal (cottontail size)		1	1							
Fish	1	1								
ADDITIONAL OVERLAPPING FAUNAL ELEMENTS										
Artiodactyla	1							1		2
Medium-Small Artiodactyla	1	1								
Small Artiodactyla	1	1								
Large Mammal	1			1			2			
Medium Mammal	1					1	2			3
Medium-Large Mammal	1					1	1			

Number of identifiable bones: 21

Percent of long bone shaft fragments: 24%

presented by a single masonry room enclosing 10.5 sq. meters of floor space. A rectangular hearth was present in the northeast corner of the room, and no evidence existed to indicate whether it had been vented with a chimney or flue.

Artifactual debris from LA 12507 indicate that occupation of the site location was limited. Possible consumption of a single sheep or goat, a "rabbit-sized" mammal and a fish are indicated through a small number of faunal elements. No evidence of any nature exists to suggest consumption of domesticated or nondomesticated vegetative resources. Ceramic fragments from a minimum of 7 different vessels were recovered, but of these, only two were represented by more than one or two sherds each. A single unifacially retouched stone implement constituted the entire tool inventory of the site location, and no evidence in the form of substantial numbers of debitage or cores was apparent to suggest that stone tools were manufactured at the site.

LA 12507 is thus intriguing in that it represents a material record of considerable investment into construction of an architectural facility, and yet little evidence of habitation of that facility. It is apparent from this evidence that the site location was not a successful, permanently occupied homestead. The extreme paucity of artifactual remains of any nature might be taken to indicate that the site represets a seasonally revisited habitation base for farming, hunting, gathering or herding activities; but if so, it is clear that procurement, processing and consumption activities undertaken in the context of that occupation were performed at locations other than LA 12507 itself. Archeological survey of the general vicinity resulted only in the documentation of corral structures located 140 meters to the southwest of the structure. All of these corrals were totally devoid of surficial artifactual debris.

The possibility also exists that LA 12507 represents the location of an unsuccessful homestead attempt in which a house was constructed, inhabited for a brief period of time and then abandoned. The site is situated a few meters south of and inside the boundaries of the Cochiti Pueblo reservation, which was granted to the Cochiti Tribe during the early years of the Spanish Colonial phase. It is thus possible that the inhabitants may have initiated a homestead effort at the site location and could have been subsequently evicted after a short term of occupancy.

Confirmation of this possibility has not been found in the historic literature thus far, but continued examination of historic documents for evidence of such encroachment litigation seems warranted by the archeological record in this case.

LA 12515

During survey LA 12515 was recorded as a possible pithouse depression, although no artifacts were found in association with the feature. The depression was located on the top of a narrow basalt ridge on the west side of the Rio Grande River approximately 300 meters north of Drainage Basin No. 24. The ridge was parallel to the river and was situated approximately 20 meters above it at an elevation of 5320 ft. Dominant vegetation included side oats and grama grasses and snakeweed. Junipers occurred infrequently upstream and downstream from the site.

The depression measured 4.3 meters by 1.6 meters. A test trench, measuring 4.3m x 0.6m x 0.3m, was excavated into the depression along a north-south axis. A second test, 0.6m x 0.5m was made. The soil was homogeneous and sterile. Although the depression was a physiographic anomaly in the basalt ridge, no evidence was recovered which supported the hypothesis that it was a cultural phenomenon.

LA 12517

LA 12517 consisted of a single Anasazi early P-IV structure. The site was located on the west side of the Rio Grande, on a basalt ridge near the mouth of White Rock Canyon. It was situated about 20 meters above the river bed at an elevation of 5320 ft. LA 12519 lies 85 meters north of the structure and LA 12518 is approximately 100 meters to the northwest. The room was located on a flat surface with no observable slope. The site was situated in the Upper Sonoran Juniper vegetative community. Ground cover included clumps of juniper, grama grass and snakeweed. Cholla and prickly pear were found over the whole area. Because the structure was sitting directly on the talus, the ground cover was either sparse or nonexistant.

The structure was excavated as a single unit. A grid pattern was not placed over the site and exterior tests were not made.

Architecture

Room 1:

Room 1 was built on the talus and lay directly on a basalt outcrop.

Shape: Circular surface structure.

Orientation: Orientation could not be determined due to shape.

Condition: The room was not vandalized and was in fair to good state of preservation.

Interior Room Dimensions: Room 1 had a north-south axis of 1.0m and an east-west of 1.12m. The walls ranged in size from .28m on the west to between .30m and .65m on the south. Wall heights ranged from .35m on the north to 1.0m on the south.

Walls: All walls were of similar construction and will be described together below.

Type of Elements: Local basalt boulders and clasts.

Size of Elements: Basal elements ranged in size from 38cm x 30cm to 65cm x 20cm. Upper element size ranged from 27cm x 24cm to 44cm x 34cm.

Placement and Construction of Elements: Elements were dry stacked producing poorly constructed walls. Some elements were laid vertically, others horizontally. An existing boulder formed a portion of the south wall (1.05m x .67m).

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: The wall elements were probably one element wide.

Chinking: No chinking was present.

Corners: Corners were round and interlocking.

Plaster: No plaster was evident.

Entrances: No entrance was found.

Floors: The floor was a poorly defined layer of hard packed earth overlaying the talus.

Roofing: No roofing materials were recovered.

Interior Features: No interior features were found.

Room Fill: The fill was 14cm deep and consisted of two natural strata. The upper stratum was 2cm to 5cm of top soil, which was underlain by a second stratum 8cm to 12cm deep. This lower stratum was composed largely of decayed matter and covered the interior floor. Burned stones were intermixed throughout the second stratum. Artifactual material was recovered as a single unit encompassing both natural strata, and included lithics and sherds.

Rubble: Very little wall rubble was associated with the structure.

Exterior Fill: No exterior room grids were excavated.

Exterior Features: None

Artifactual Assemblages

Although two natural strata totaling 14cm in depth were defined for Room 1, the cultural material were collected as a single unit (level 1).

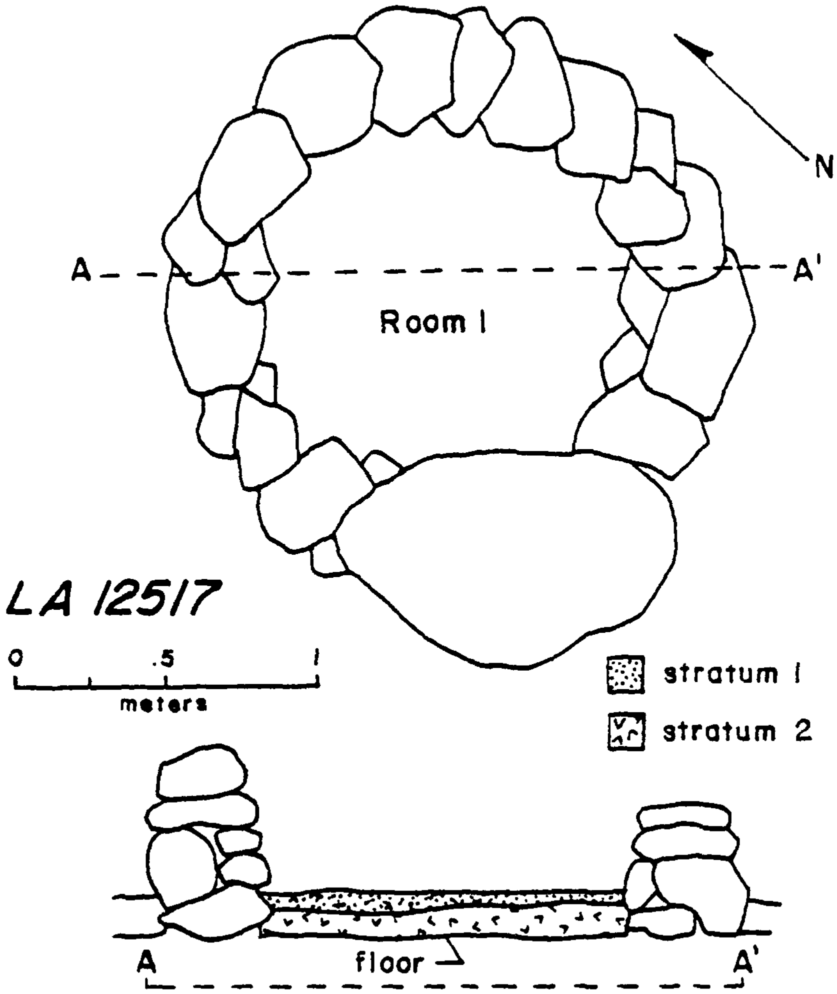


FIG. 9.53 LA 12517—Room 1, plan view and cross section

Ceramic Artifacts

Ten sherds from one Largo Glaze-Polychrome bowl were recovered from the room fill. The bowl was characterized by a white interior slip with a pink exterior slip. The best dates for the manufacture of this vessel are between A.D. 1400 and 1450.

Lithic Artifacts

A total of 509 lithic artifacts was recovered from the fill in Room 1. The assemblage largely consisted of debitage (73%) and small angular debris (26%). Three retouch flakes, one resharpening flake and one piece of large angular debris were also recovered.

1. Material Selection

Twenty-four different material taxons are represented in this assemblage. Artifacts were manufactured from chalcedonies (41.7%, 8 taxons), basalts (21.8%, 4 taxons), metarhyolite (15.3%), cherts (9.8%, 3 taxons) and obsidians (3%, 3 taxons). An additional eleven artifacts were manufactured from quartzite (2 taxons), phyllite and jasperoid chert. The majority of these material taxons are locally available in the Cochiti area.

2. Manufacture

Although no cores were recovered in Room 1, the amount of debitage and small angular debris with cortical surfaces (34.4%) suggests that primary reduction activities were conducted at this site location. In particular, the cherts and basalts exhibited high percentages of cortical surfaces, 62.0% and 40.6% respectively.

3. Tool Use

Evidence of tool use was restricted largely to debitage and small angular debris. Only one resharpening flake, manufactured from chert, may have indicated the presence of a facially retouched artifact, although no such artifacts were recovered from Room 1.

A total of 33 pieces of debitage or small angular debris exhibited 38 utilized edges. This represents six percent of the total lithic assemblage. Only five of the edges had been retouched. In general, there was little diversity in edge shape; most were either straight or convex. The chalcedony and chert edges in general exhibited more microscarring than the basalt or obsidian edges.

Four of the obsidian artifacts (29%) exhibited uti-

TABLE 9.73

LA 12517–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, LEVEL 1													
Obsidian:	3520	1	–	–	–	–	–	–	–	–	–	–	1
	3524	–	1	–	–	–	–	–	–	–	–	–	1
	3530	8	2	2	–	–	–	–	–	–	–	–	12
Basalt:	3701	100	22	–	–	1	–	–	–	–	–	–	123
	3700	1	–	–	–	–	–	–	–	–	–	–	1
	3030	7	6	–	–	–	–	–	–	–	–	–	13
	3050	6	1	–	–	–	–	–	–	–	–	–	7
Chert:	1050	4	2	–	–	–	–	–	–	–	–	–	6
	1051	2	1	–	–	–	–	–	–	–	–	–	3
	1090	27	11	2	–	–	–	–	–	–	–	–	40
	1430	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	8	1	–	–	–	–	–	–	–	–	–	9
	1053	12	7	–	–	–	–	–	–	–	–	–	19
	1091	26	5	–	–	–	–	–	–	–	–	–	31
	1213	–	1	–	–	–	–	–	–	–	–	–	1
	1214	20	8	–	–	–	–	–	–	–	–	–	28
	1215	59	28	–	–	–	–	–	–	–	–	–	87
	1310	5	5	–	–	–	–	–	–	–	–	–	10
	1340	20	7	–	–	–	–	–	–	–	–	–	27
Quartzite, Jasp.:	4000	1	1	–	–	–	–	–	–	–	–	–	2
	4001	–	1	–	–	–	–	–	–	–	–	–	1
	1501	3	–	–	–	–	–	–	–	–	–	–	3
	1502	56	22	–	–	–	–	–	–	–	–	–	78
Slate, Shale, Fr.:	4301	5	–	–	–	–	–	–	–	–	–	–	5
Room Totals:		372	132	4	0	1	0	0	0	0	0	0	509

lized edges. These edges were characterized by wear patterns indicative of both sawing and scraping activities. The obsidian edges showed little microscarring, which is suggestive that the edges were not used on highly resistant media.

Nine of 143 basalt debitage and small angular debris (6%) exhibited a total of 10 utilized edges. Only one edge had been unidirectionally retouched. Six of the edges were straight in outline shape; one was a projection. Most of these edges exhibited bidirectional rounding and/or polish, which suggest sawing motions. One edge exhibited beveling and another rounding on a flat surface, both of which are indicative of transverse usage or scraping. In general, the basalt edges exhibited little microscarring and may have been used on a media less resistant than wood.

Of the 50 chert artifacts, only four (8%) exhibited five utilized edges. One edge had been unidirectionally retouched, and the edges were generally straight in outline shape. Microscar patterns were largely perpendicular and diagonal step fracture, and only one edge exhibited rounding. These edges may reflect transverse motion and hence scraping.

Fifteen of 212 chalcedony artifacts (7%) exhibited a total of 18 utilized edges. With one exception, these edges were straight or convex in outline shape. Wear patterns exhibited by chalcedony edges indicated their usage for both cutting and scraping.

Thus the debitage and small angular debris exhibited considerable diversity in utilization. Obsidian flakes, in particular, were selected for usage in significantly higher relative frequencies than other material types.

Bone Artifacts

No bone artifacts were recovered from the fill in Room 1.

Fauna

The faunal sample on LA 12517 consisted of a single Norway rat (*Rattus norvengicus*) humerus.

SUMMARY

LA 12517 consisted of a single small ovoid masonry structure which encompassed only 1.0 square meters of floor space. Ceramics from one Largo Glaze Polychrome bowl (A.D. 1400-1450) indicate an occupation during the Anasazi P-IV phase. Although no cores were recovered during the excavation of the room, an extremely high volume of debitage and small angular debris indi-

cates that the structure served as the locus of tool manufacturing activities. Eleven different material taxons were represented by 10 or more pieces of debitage and small angular debris, and three taxons were represented by more than 75 artifacts.

A total of 26 tools were utilized as well. Wear patterns indicate that the usage was predominately sawing or slicing with straight and convex edges, although some scraping usage is represented as well. Utilized edges were nearly all unretouched and nonsinuous.

LA 12517 thus appears to represent a location at which a very limited set of tool manufacture and usage activities were performed. No evidence existed to indicate that the room structure was roofed and original wall height was not much greater than the standing wall remnants at present. Possible food consumption activities are indicated solely through the presence of a single fragmented bowl. No milling implements were recovered and no evidence of a hearth was discerned.

Occupation of the site has been assigned to the P-IV phase of the Anasazi Period based upon the occurrence of a single Largo G-P bowl represented by 10 fragments. The presence of a humerus from a Norway rat, an Old World species, may indicate either reoccupation of the structure during the Historic Period or might be due to nonhuman agents.

LA 12518

LA 12518 consisted of a single Anasazi P-IV roomblock containing two rooms. The site was located at the mouth of White Rock Canyon on the west side of the Rio Grande River on a wide bench situated 40 meters from the edge of the river. The site lies at the south end of the bench, midway between two talus slopes at an elevation of 5305 ft. LA 12518 is situated in the Upper Sonoran Juniper vegetative community. Dominant vegetation in the vicinity of the site included snakeweed, juniper, cholla and grama grasses.

The roomblock was excavated in two units, Room 1 and Room 2. Although two natural strata were defined in each room, artifactual materials were collected as a single unit (level 1). Trenches were excavated contiguous to three walls of the roomblock. A grid system was not placed over the site.

Architecture

Orientation of Structure: The long axis of the structure was oriented 42 degrees west of true north. It had a southeasterly exposure.

Dimensions of Roomblock: 2.91m x 1.29m (3.75 square meters).

Description of Rooms: Due to their similarity, Rooms 1 and 2 will be described together. The roomblock was separated by an interior dividing wall, forming Rooms 1 and 2.

Rooms 1 and 2:

Shape: Rectangular surface structures.

Orientation: The long axes of the rooms were oriented 42 degrees west of true north.

Condition: The site did not appear to have been vandalized, although grasses and a juniper tree were growing in the room fill. Walls were in poor condition and difficult to define in some cases.

Interior Room Dimensions: Room 1

	Length	Width	Height
North	.62m	.20m	.17m
South	.91m	.15m	.18m to .34m
East	1.13m	.15m to .20m	.19m to .24m
West	1.31m	.20m to .26m	.26m to .29m

Interior Room Dimensions: Room 2

	Length	Width	Height
North	.91m	.15m	.18m to .34m
South	.81m	.20m	.15m
East	1.43m	.19m to .21m	.16m to .18m
West	1.27m	.18m to .20m	.26m

Walls: The walls of Rooms 1 and 2 were similar in construction and will be discussed together. The south and west walls of Room 2 were destroyed by a juniper tree growing in the room.

Type of Elements: Local basalt slabs and clasts. Approximately 50% of the elements were vesicular basalt.

Size of Elements: Foundation elements were uniform in size and shape, ranging from 45cm x 17cm to 19cm x 14cm in maximum dimensions.

Placement and Construction of Elements: Elements for the most part were laid horizontally with the long axis of the clast corresponding to the long axis of the walls. All elements were dry laid.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: The elements were overlapping and one element wide and a single course high.

Chinking: No chinking elements were found.

Corners: The corners were abutted and the interior room divider abutted the exterior walls.

Plaster: The east wall exterior of Room 1 had slight evidence of adobe plaster. The south face of the dividing wall also exhibited some plaster.

Entrances: No entrance was found.

Floors: The floor was poorly defined and badly washed. It was hard packed dirt with inclusions of adobe mud throughout. The floor was located approximately 30cm below the surface and did not appear to have been excavated into the ground surface.

Roofing: No evidence of roofing was found.

Interior Features: No interior features were found in Room 1 or 2.

Room Fill: The room fill was shallow, only about 30cm deep. Two strata were noted; the top 17cm was a sandy loam fill, this was underlain by a fine light yellow sand. Tests through the floor revealed a course-grained sand. Cultural material was recovered as a single unit (level 1) and include sherds and lithics.

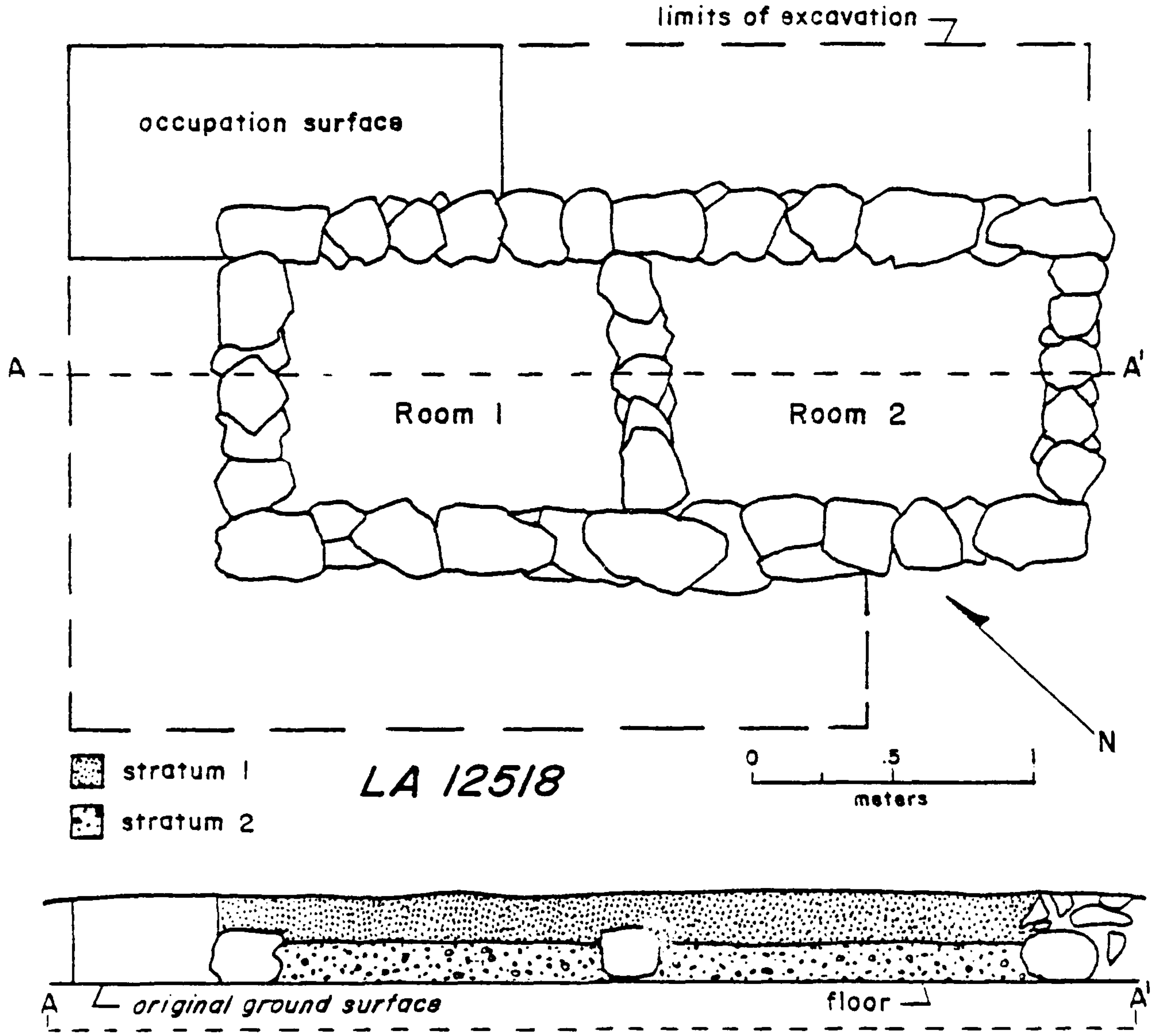


FIG. 9.54 LA 12518—Rooms 1 and 2, plan view and cross section

Rubble: A total of .94 cubic meters of wall rubble was removed from interior and exterior excavation of Rooms 1 and 2.

Exterior Fill: The exterior fill was excavated from all but the south wall of Room 1 and 2. The cultural material recovered from the exterior fill included sherds, lithics and bone.

Exterior Features:

Occupation Level: Outside the northeast corner of the structure, at wall foundation level, a hard packed surface was found. Numerous sherds and lithics were recovered from this surface. This area extended one meter south, from the northeast corner, along the exterior of the east wall.

Artifactual Assemblages

The material recovered from LA 12518 was separated into three samples: 1) interior fill of Room 1; 2) interior fill of Room 2; and 3) fill from exterior trenches, including an exterior occupation surface and an area of wall fall. Lithics, ceramics, bone and glass were recovered from LA 12518.

Room 1, level 1

Room 1 was shallow (30cm deep) and although two natural strata were defined during the course of excavation, all cultural materials were collected as a single unit (level 1).

Ceramic Artifacts

A total of 29 sherds from a minimum of six vessels was recovered from Room 1. Only two of the vessels were represented by more than one sherd: four sherds from a Largo G/Y bowl, and 21 sherds from a Blind Indented corrugated jar. With the exception of one Puname Polychrome olla sherd, the remaining ceramics date predominantly to early-middle P-IV phase of the Anasazi Period. The sherds from the Largo G/Y vessel had been worked and may have been brought into the site during a later occupation. Sherds from the same utility ware and the Largo G/Y bowl were recovered from Room 2 and the exterior test trenches as well.

Lithic Artifacts

A total of 302 lithic artifacts was recovered from the fill of Room 1. The majority of lithics were debitage (93.7%) and small angular debris (5.3%). One core, one piece of large angular debris, one biface and one bipolar flake were recovered as well.

1. Material Selection

Lithic artifacts were predominantly manufactured from chalcedony (60.0%, 8 taxons). One taxon of chalcedony (1215) comprised 34.1% of the total number of lithics recovered from Room 1. Other materials included basalt (19.9%, 3 taxons), chert (13.9%, 4 taxons) and obsidian (11.3%, 5 taxons). An additional eleven artifacts were manufactured from jasperoid, metarhyolite, quartz and quartzite. The majority of these materials are locally available.

2. Manufacture

The manufacture of lithic artifacts from a minimum of three material taxons is suggested from this sample. These include one taxon of chalcedony (1215), one taxon of basalt (3701) and one taxon of obsidian (3530). The obsidian and chalcedony taxons are represented by high frequencies of cortical debitage which suggest primary manufacturing activities. The basalt, however, exhibited few cortical surfaces. The high frequencies of noncortical debitage suggest secondary manufacturing activities as well. One core and one piece of large angular debris manufactured from 1215 were also recovered. In general, the reduction technique employed for the basalt and chalcedony involved the preparation of a noncortical platform and freehand percussion detachment of debitage. A single piece of obsidian debitage suggests a bipolar reduction technique of manufacture.

3. Tool Utilization

Little tool use is indicated from the lithic artifacts recovered from the fill of Room 1. A single bifacially retouched chert artifact exhibited use on two edges and one edge from a piece of debitage (obsidian) had been utilized. Both the biface and the piece of debitage were characterized by perpendicular and diagonal step fracture.

Bone Artifacts

No bone artifacts were recovered from the fill of Room 1.

Botanical Materials

A fragment of a burned peach pit was recovered from the fill.

Room 2, level 1

As in Room 1, cultural materials in Room 2 were recovered as a single unit, although two natural strata were defined during the course of excavation. Materials included lithics and ceramics.

Ceramic Artifacts

A total of 21 sherds from a minimum of four vessels was recovered from the fill of Room 2. Only two vessels, a Puaray G-P bowl and a Blind Indented Corrugated jar were represented by more than one sherd. The utility ware was represented by 15 sherd fragments and may represent portions of the same vessel recovered in the fill of Room 1. With the exception of the Puaray G-P bowl, the remaining vessels were manufactured from locally available materials. Sherds from the Puaray G-P bowl had been worked and may have represented a later historic reoccupation.

Lithic Artifacts

A total of 93 lithic artifacts was recovered from the fill of Room 2. Debitage accounted for 89.1% of these, and 9.8% were small angular debris. A single chert core was recovered. Fifteen different material taxons are represented in the sample from Room 2. Thirty-six percent of these were manufactured from a single taxon of chalcedony (1215). This taxon accounts for 33.3% of the total lithic assemblage recovered from the site as a whole. For the remaining lithic artifacts, 29.3% were

manufactured from six other taxons of chalcedony, 12 from three taxons of chert (13.0%), eight from one taxon of basalt (8.7%), eight from two taxons of obsidian (8.7%), two from one taxon of quartzite (2.2%) and one from a jasperoid taxon (1.1%).

The amount of cortical and noncortical debitage and small angular debris for one taxon of chalcedony (1215) may indicate primary manufacturing activities. Although debitage and small angular debris for the remaining taxons exhibited high percentages of cortical surfaces, these occur in frequencies too low to indicate their routine manufacturing within the room. The only core recovered from the fill in Room 2 was manufactured from a material taxon (1070) for which no debitage or small angular debris occurred. None of the lithics exhibited use.

Exterior Trenches

Trenches 50cm wide and 40cm deep were excavated around the exterior of the roomblock to the west, north and east. Materials recovered from this trench were collapsed into a single sample. Although an exterior occupation surface was defined along the east wall of Room 1, materials from this area were not separated from others recovered from the trenches.

Ceramic Artifacts

A total of 42 sherds from a minimum of three vessels was recovered from the trenches. The majority of these were collected from the east trench along Rooms 1 and 2 which included the exterior occupation surface. None were collected from the western trench. Thirty-four of these sherds were from a Blind Indented corrugated jar, which may be parts of the same vessel recovered from Rooms 1 and 2. The remaining sherds were from an unidentified glaze-on-red olla and a Largo G/Y bowl. The utility ware and the glaze-on-red ware were manufactured from locally available tempering materials. The Largo G/Y vessel was manufactured from augite latite and was probably manufactured at San Marcos Pueblo in the Galisteo Basin.

Lithic Artifacts

A total of 330 lithic artifacts was recovered from the exterior trenches outside Rooms 1 and 2. The majority were debitage (93.5%) and small angular debris (4.3%). Four pieces of large angular debris and two mano fragments were recovered as well.

1. Material Selection

Lithic artifacts were predominantly manufactured from chalcedony (52.6%, 7 taxons), basalt (20.3%, 4 taxons), obsidian (12.2%, 4 taxons) and chert (10.0%, 3 taxons). An additional sixteen artifacts were manufactured from metarhyolite, jasperoid, quartzite and opal. Thirty-one percent of artifacts comprising the assemblage were manufactured from a single chalcedony taxon (1215). The majority of the materials are available within the study area.

2. Manufacture

The amount of cortical debitage and small angular debris for at least four material taxons suggest primary manufacturing activities. These include two taxons of chalcedony (1215, 1053), one taxon of basalt (3701) and one taxon of obsidian (3530). The percentage of cortical surfaces for the obsidian is especially

TABLE 9.74

LA 12518—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	TEMPER and SOURCE AREA	FORM	Room 1, level 1	Room 2, level 1	North Trench	East Trench	Wall fall	TOTAL
Santa FeB/W	vitric tuff—Pajarito Plateau	bowl	1	–	–	–	–	1
San Clemente G-P	scoria—Mesa Negra	bowl	1	–	–	–	–	1
Unid. Glaze/Red	rhyolite tuff—Pajarito Plateau	bowl	–	1	–	–	–	1
	scoria—Meas Negra	olla	1	–	1	–	2	4
Largo G/Y	augite latite—San Marcos Pueblo	bowl	4	–	2	3	–	9
Unid. Glaze-Polychrome	scoria—Mesa Negra	bowl –	1	–	–	–	–	1
Puaray G-P	hornblende latite—Tonque Pueblo	bowl	–	3	–	–	–	3
Puname Polychrome	diabase basalt—Zia Pueblo	olla	1	–	–	–	–	1
Blind Indented Corrugated	glassy andesite—Pajarito Plateau	jar	21	15	6	20	8	70
Plain utility (historic)	crystal pumice—local	jar	–	1	–	–	–	1
		TOTAL	29	21	9	23	10	92

high (78.8%). Four pieces of large angular debris (three of 1215) were recovered. No cores were recovered. Although the remaining material taxons exhibited high percentages of cortex, the frequencies of debitage and small angular debris are too low to suggest manufacture in this provenience.

3. *Tool Use*

Milling activities were represented by two mano fragments. These were recovered in the trench to the east of Rooms 1 and 2. Both fragments were manufactured from a single taxon of fine-grained basalt (3050) and both exhibited longitudinal striae.

Only three edges from three pieces of debitage (two obsidian and one basalt) exhibited utilization.

Bone Artifacts

No bone artifacts were recovered from the exterior trenches.

Historic Artifacts

A single fragment of clear glass was recovered from the trench along the north wall of Room 1. This item would post-date 1930 in manufacture (Kendrick 1967: 24).

Fauna

Five bone fragments were recovered from the exterior trenches. Two individuals were represented: one cottontail rabbit (*Sylvilagus* spp.) and a collared lizard (*Crotaphytus collaris collaris*). The cottontail rabbit remains consisted of four vetebra fragments; the lizard was represented by a single dentary fragment.

TABLE 9.75

LA 12518–LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, LEVEL 1													
Obsidian:	3520	1	1	–	–	–	–	–	–	–	–	–	2
	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3525	1	–	–	–	–	–	–	–	–	–	–	1
	3530	28	1	–	–	–	–	–	–	–	–	–	29
	3510	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	49	5	–	–	–	–	–	–	–	–	–	54
	3030	2	–	–	–	–	–	–	–	–	–	–	2
	3050	5	–	–	–	–	–	–	–	–	–	–	5
Chert:	1050	13	1	–	–	–	–	–	–	–	–	–	14
	1051	19	2	–	–	–	–	–	–	–	–	–	21
	1070	1	–	–	–	–	–	–	–	–	–	–	1
	1090	6	–	–	–	–	–	–	–	–	–	–	6
Chalcedony:	1052	8	–	–	–	–	–	–	–	–	–	–	8
	1053	12	–	–	–	–	–	–	–	–	–	–	12
	1091	11	–	–	–	–	–	–	1	–	–	–	12
	1210	1	–	–	–	–	–	–	–	–	–	–	1
	1214	10	2	–	–	–	–	–	–	–	–	–	12
	1215	98	3	–	1	1	–	–	–	–	–	–	103
	1310	2	–	–	–	–	–	–	–	–	–	–	2
	1340	5	–	–	–	–	–	–	–	–	–	–	5
Quartzite, Jasp.:	4000	3	–	–	–	–	–	–	–	–	–	–	3
	4001	2	–	–	–	–	–	–	–	–	–	–	2
	1501	3	1	–	–	–	–	–	–	–	–	–	4
	1502	2	–	–	–	–	–	–	–	–	–	–	2
Room totals:		284	16	0	1	1	0	0	1	0	0	0	302
ROOM 2, LEVEL 1													
Obsidian:	3523	1	–	–	–	–	–	–	–	–	–	–	1
	3530	7	–	–	–	–	–	–	–	–	–	–	7

TABLE 9.75 (con't)

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
Basalt:	3701	6	3	–	–	–	–	–	–	–	–	–	9
Chert:	1050	2	1	–	–	–	–	–	–	–	–	–	3
	1051	6	–	–	–	–	–	–	–	–	–	–	6
	1090	3	–	–	–	–	–	–	–	–	–	–	3
	1070	–	–	–	1	–	–	–	–	–	–	–	1
Chalcedony:	1052	4	–	–	–	–	–	–	–	–	–	–	4
	1053	8	–	–	–	–	–	–	–	–	–	–	8
	1091	6	–	–	–	–	–	–	–	–	–	–	6
	1214	4	–	–	–	–	–	–	–	–	–	–	4
	1215	28	5	–	–	–	–	–	–	–	–	–	33
	1310	1	–	–	–	–	–	–	–	–	–	–	1
	1340	4	–	–	–	–	–	–	–	–	–	–	4
Quartzite, Jasp.:	4000	2	–	–	–	–	–	–	–	–	–	–	2
	1502	1	–	–	–	–	–	–	–	–	–	–	1
Room Totals:		83	9	0	1	0	0	0	0	0	0	0	93
EXTERIOR TESTS													
Obsidian:	3520	3	–	–	–	–	–	–	–	–	–	–	3
	3523	8	–	–	–	–	–	–	–	–	–	–	8
	3530	25	–	–	–	–	–	–	–	–	–	–	25
	3510	3	–	–	–	–	–	–	–	–	–	–	3
	3525	–	–	–	–	1	–	–	–	–	–	–	1
Basalt:	3701	57	2	–	–	–	–	–	–	–	–	–	59
	3700	1	–	–	–	–	–	–	–	–	–	–	1
	3030	3	–	–	–	–	–	–	–	–	1	–	4
	3050	1	–	–	–	–	–	–	–	2	–	–	3
Chert:	1050	6	–	–	–	–	–	–	–	–	–	–	6
	1051	13	–	–	–	–	–	–	–	–	–	–	13
	1090	15	–	–	–	–	–	–	–	–	–	–	15
Chalcedony:	1052	12	–	–	–	–	–	–	–	–	–	–	12
	1053	24	2	–	–	–	–	–	–	–	–	–	26
	1091	15	1	–	–	–	–	–	–	–	–	–	16
	1214	10	–	–	–	–	–	–	–	–	–	–	10
	1215	94	8	–	–	3	–	–	–	–	–	–	105
	1310	1	–	–	–	–	–	–	–	–	–	–	1
	1340	3	–	–	–	–	–	–	–	–	–	–	3
Quartzite, Jasp.:	4000	3	–	–	–	–	–	–	–	–	–	–	3
	1501	6	1	–	–	–	–	–	–	–	–	–	7
	1502	5	–	–	–	–	–	–	–	–	–	–	5
Other Material:	1391	1	–	–	–	–	–	–	–	–	–	–	1
Totals:		309	14	0	0	4	0	0	0	2	1	0	330

SUMMARY

Occupation of LA 12518 has been assigned to the P-IV phase of the Anasazi Period because of the relatively great number of P-IV phase vessels comprising the ceramic inventory of the site. A single fragment each from an Historic Period plain utility jar and a Puname Polychrome olla were recovered, as was a peach pit and a fragment of clear glass. These items indicate some degree of Historic Period activity in the vicinity of the site location, but it is clear that the major occupation of LA 12518 occurred during the P-IV phase of the AnasazPeriod.

Architectural facilities at the site location were represented by two small surface rooms (1.0 square meters and 1.2 square meters of floor space respectively) constructed contiguously. Neither room exhibited evidence of hearths, but food processing and consumption are indicated through the presence of two mano fragments recovered outside the room structures and fragments from eight Anasazi Period vessels. The vessel assemblage

included one corrugated jar, one olla and six bowls, one of which was a P-III phase Santa Fe B/W vessel. The jar was represented by 70 sherds and one bowl was represented by nine sherds. Of the remaining vessels four were represented by a single sherd each and two were represented by no more than four sherds.

The majority of lithic artifacts were recovered from Room 1 (302 artifacts, two tools), and from the exterior of the rooms (328 artifacts, five tools). Room 2 exhibited only 92 lithic artifacts, none of which had been used as tools. Two of the seven tools recovered form the site were mano fragments with the remaining inventory being made up of a single subrectangular biface and four pieces of debitage. Wear patterns indicated both sawing and scraping usages.

The lithic artifact assemblage thus indicates that LA 12518 served as a locus of manufacturing activities but was not employed as a site of routine tool usage. Eight different taxons of chalcedony, chert and obsidian exhibitea between 23 and 61 pieces of debitage and small angular debris, while one taxon of basalt was represented by 130 artifacts, and one taxon of chalcedony was represented by 238 artifacts. Debitage and small angular debris were characterized by relatively high frequencies of cortical surfaces which indicates that primary stages of manufacture were being undertaken.

It can be suggested from the low incidence of utilization represented in the assemblage that tools manufactured at the site location were used elsewhere.

LA 12518 thus appears to represent a location at which some degree of storage and consumption of food resources was undertaken, as was manufacture of stone tools. The lack of hearth facilities inside rooms, and the paucity of stone tools actually used at the site may indicate that LA 12518 was not a locus of extensive or long term habitation. In this sense, the site does not appear to represent a "base camp" residence characterized by diversity in tool utilization for a variety of tasks. Food consumption activities are somewhat restricted as well, in that only a single olla was recovered. The ceramic assemblage thus indicates that food consumption was restricted to minimal processing and serving and did not necessitate short term storage of either water or food resources. Remains from a cottontion of locally available fauna as well.

It thus seems clear that occupation of LA 12518 was conditioned by an overall subsistence strategy somewhat more complex than simple seasonal or year round residence at particular site locaitons. In light of this, the presence of two P-IV phase ceramic vessels manufactured with tempers available at two different locations in the Galisteo Basin is intriguing. The consistent use of vessels manufactured in other regions by inhabitants of small, nonpermanently occupied P-IV phase site locations within the project area indicates the possibility that an extensive interregional trade for either manufactured items or food resources was operational throughout the entire P-IV phase of the Anasazi Period.

LA 12519

LA 12519 consisted of one roomblock which was composed of two contiguous Anasazi P-IV structures, a rectangular surface structure (Room 1) and a circular semisubterranean structure (Room 2). The site was located on the west bank of the Rio Grande River at the southeastern edge of a bench 10m above the river. The site was situated at the base and the western side of a talus ridge at an elevation of 5305 ft. This ridge separated the site from the Rio Grande River. Dominant vegetation of the bench included rabbitbrush, snakeweed, cholla and grama grass, while junipers dominated the talus. It was located in the Juniper vegetative community.

The roomblock was excavated as two units, Rooms 1 and 2. For each room, cultural material was recovered in a single level. Trenches were excavated to the exterior of the walls. A grid pattern was not placed over the site. The rubble mound measured five meters in diameter and 20cm high prior to excavation.

Architecture

Orientation of Structure: The long, west wall was oriented 55 degrees east of true north. Exposure of the site location was west-northwest.

Dimensions of Roomblock: 2.08m x 3.40m (7.07 square meters).

Room 1:

Shape: Rectangular surface structure.

Orientation: The long axis was oriented 55 degrees east of true north.

Condition: The walls were very badly eroded.

Interior Room Dimensions:

	Length	Width	Height
North	1.35m	.28m to .46m	.27m to .49m
South	1.15m	.27m	.34m to .44m
East	1.98m	.22m to .39m	.44m to .46m
West	1.99m	.33m to .48m	.27m to .38m

Walls: The east and north walls were similar in construction and are described together. The south and west walls will be described separately.

East and North Walls:

Type of Elements: Local basalt boulders, slabs and

clasts.

Size of Elements: Elements range in size from 20cm x 27cm x 10cm to 50cm x 40cm x 11cm.

Placement and Construction of Elements: The east and north walls were largely collapsed and the elements were lying at all angles. These walls were difficult to define because of their badly eroded condition.

Shaping of Elements: Unmodified.

Wall Facing: Elements placement was such that interior and exterior walls were not faced.

Courses: Wall elements were probably a single element wide.

Chinking: No evidence of chinking.

Corners: Both the southwest and southeast corners were abutting. The northwest and northeast corner construction could not be determined.

Plaster: No plaster evident.

South Wall:

Type of Elements: Local basalt clasts.

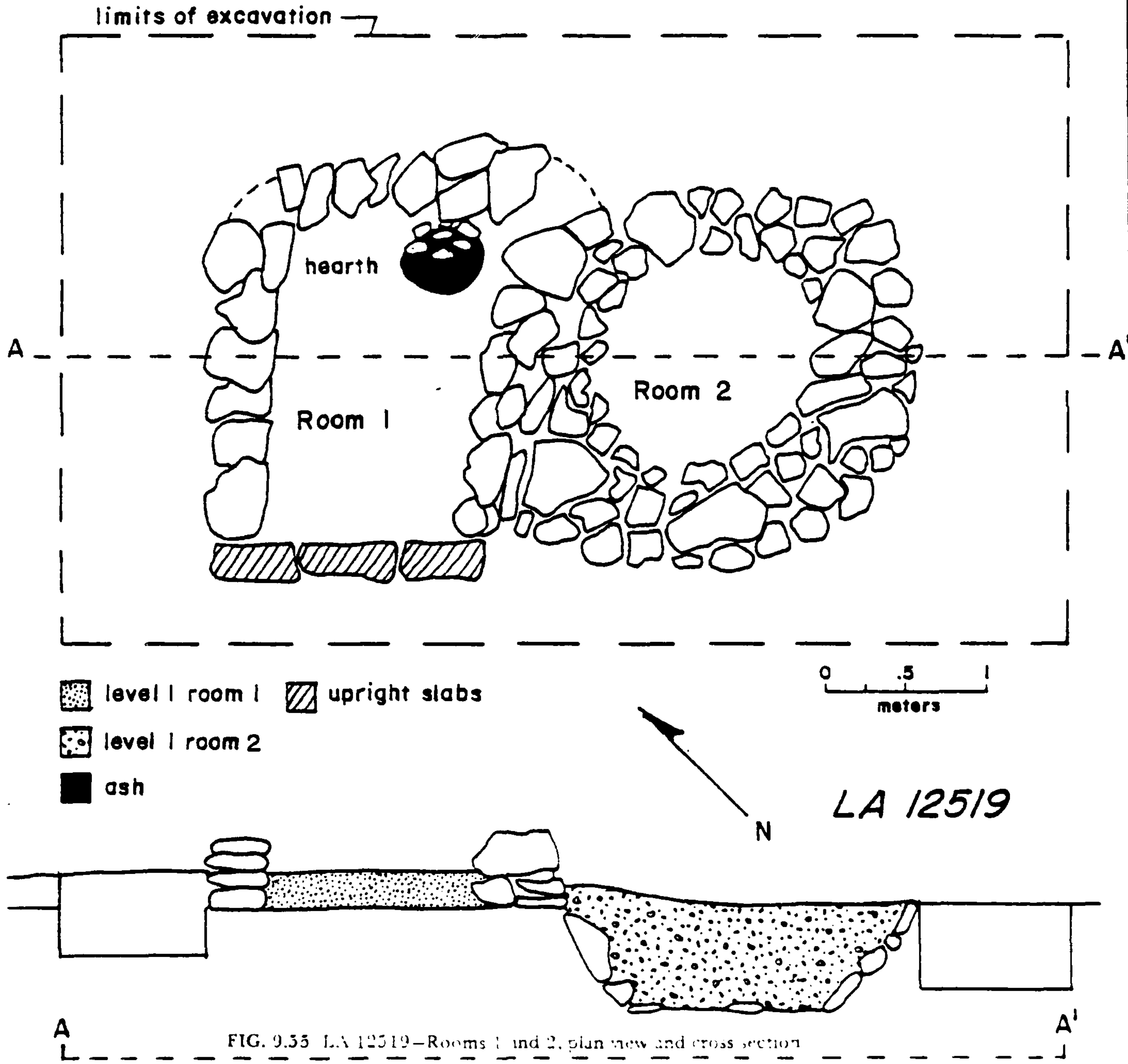


FIG. 9.55 LA 12519—Rooms 1 and 2, plan view and cross section

Size of Elements: Three large elements comprising the south wall measured 53cm x 40cm x 8cm; 40cm x 35cm x 5cm; 44cm x 38cm x 27cm.

Placement and Construction of Elements: Three large vertically set basalt clasts that tilted slightly into the room formed the south wall. Elements were dry laid.

Shaping of Elements: Unmodified.

Wall Facing: Placement was such that interior and exterior walls were faced.

Courses: The south wall was constructed as a single course.

Chinking: No chinking was present.

Corners: The south wall elements abutted the west and east walls.

Plaster: No plaster was evident.

West Wall:

Type of Elements: Local basalt clasts.

Size of Elements: Element size ranged from 22cm x 6cm to 45cm x 9cm. Basal elements tended to be larger than the upper stones.

Placement of Elements: The wall was dry laid and elements were placed horizontally. The long axes of the elements corresponded to the long axis of the wall.

Shaping of Elements: Unmodified.

Wall Facing: Elements were placed with flat surfaces facing the interior. The exterior was not faced.

Courses: The west wall elements were overlapping, one element wide and four courses high.

Chinking: No chinking was present.

Corners: The southwest and southeast corners of Room 1 were abutted. The northwest and northeast corners were badly eroded, and abutments could not be determined.

Plaster: No plaster was present.

Entrances: No entrance was found.

Floors: The floor was not well defined. Apparently it had been a hard packed dirt floor leveled to the foundation elements of the walls.

Roofing: No evidence of roofing was found.

Interior Features:

Hearth: A hearth was found in the northeast corner. It was represented by a burned area on the floor 30cm in diameter. Several flat stones ranging from 9cm x 9cm to 15cm x 7cm lay horizontally on the burned area. The hearth had no rim. No cultural materials were associated with this feature.

Room Fill: The fill was homogeneous, sandy loam with a few pebbles scattered throughout. Sherds, lithics and bone fragments were found in this level.

Rubble: A minimal amount of wall rubble was recovered from the interior and exterior of the room.

Exterior Fill: At the exterior northeast corner of Room 1, 20cm below the surface, a mano and metate were found. The metate lay with the grinding surface facing the ground. Two manos were found in the wall rubble. A one meter wide test trench, 50cm deep, was excavated along the exterior walls of Rooms 1 and 2. Few sherds, lithics and bones were recovered from this area.

Room 2:

Room 2 was a rock lined structure contiguous to the east wall of Room 1.

Shape: Circular semi-subterranean structure. In cross section it was cone shaped.

Orientation: Could not be determined due to shape.

Condition: The room was badly eroded.

Interior Room Dimensions:

	Length	Width	Height
North	1.93m	n.a.	.65m
South	1.93m	n.a.	.65m
East	2.08m	n.a.	.65m
West	2.08m	n.a.	.65m

Walls: All walls were of similar construction and are described together below.

Type of Elements: Local basalt boulders and clasts.

Size of Elements: Elements ranged in size from 19cm x 10cm to 60cm x 36cm x 25cm.

Placement and Construction of Elements: The elements were laid horizontally, vertically and at varying angles. The stones lined the conical shaped structure. Elements were dry laid.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not faced.

Courses: Elements were laid next to each other in a single course.

Chinking: No chinking was present.

Corners: Elements lined the cone shaped, circular structure. No corners were present.

Plaster: No plaster was evident.

Entrance: No doorway was found.

Floors: The floor was poorly defined hard packed dirt. It was 65cm below the present ground surface.

Roofing: No evidence of roofing was recovered.

Interior Features: No interior features were discernable.

Room Fill: The room fill was a loamy and sand mix underlain by a hard-packed layer of sand. A small number of sherds and lithics were recovered from Room 2.

Rubble: Generally a minimal amount of rubble was recovered.

Exterior Fill: A one meter wide trench, 50cm deep, was excavated along the exterior of all walls. A few sherds, lithics and bones were found outside the room walls.

Exterior Features: No exterior features were found.

Artifactual Assemblages

The fill from Room 1 was homogeneous; lithics, ceramics and bones were recovered. No artifacts were documented in direct contact with either the hearth or floor areas.

Ceramic Artifacts

No ceramics were recovered from the fill in Room 1.

Lithic Artifacts

Seven lithic artifacts were recovered from Room 1. Five were pieces of debitage and two were pieces of small angular debris. Of these, five exhibited cortical surfaces. Six different material taxons are represented: three chalcedonies, two chert and one basalt. Only one chert taxon was represented by more than one flake. None of these artifacts exhibited utilized edges.

Bone Artifacts

No bone artifacts were recovered from the fill in Room 1.

Fauna

One of three bone fragments recovered from LA 12519 was located in Room 1. This bone was a cottontail rabbit (*Sylvilagus* spp.) leg fragment. It is possible that this individual was intrusive.

Room 2, level 1

The 65cm deep fill in Room 2 was collected as a single unit. Although this room was badly eroded, it yielded the largest sample of artifacts from the site as a whole. Ceramics and lithics were recovered.

Ceramic Artifacts

Five sherds, 22% of the total ceramic assemblage, were found in Room 2. Three may be from a single Agua Fria G/R bowl. One sherd from this bowl was located in the south exterior test trench. Two of eight utility sherds were located in this room. All exhibit locally available tempering material from the Cerros del Rio or Jemez volcanics.

Lithic Artifacts

A total of 38 lithic artifacts was located in Room 2. Thirty-two of these artifacts (84%) were debitage and six (16%) were small angular debris. Lithics were manufactured from basalt (44.8%, 2 taxons); chalcedony (28.8%, 6 taxons); chert (15.8%, 2 taxons), and obsidian (10.5%, 2 taxons). Twenty-one percent of the debitage and small angular debris exhibited cortical surfaces, with slightly more than half of these exhibiting waterworn cortex. All of the materials are locally available.

1. Manufacture

The frequency of cortex for chalcedony, basalt and obsidian artifacts was high, ranging from 52.9% to 75.0% for all materials except chert (16.7%). The debitage was manufactured through a free-hand percussion technique, one bipolar obsidian flake was recovered. The absence of cores and many flakes of any one taxon (with the possible exception of basalt 3701) suggest very limited manufacturing activities.

2. Tool Use

With the exception of one chalcedony retouch flake, which may be indicative of either the manufacture or use of a facially retouched artifact, only five edges from four pieces of debitage showed evidence of utilization. The edges were either convex or straight in outline shape and exhibited a diversity in usage.

Bone Artifacts

No bone artifacts were recovered from the fill in Room 2.

Test Trenches

A31.0m wide test trench, 50cm deep, was excavated A 1.0m wide test trench, 50cm deep, was excavated around the exterior walls of Rooms 1 and 2. Cultural material recovered during the tests included ceramics, lithics and bone.

Ceramic Artifacts

A total of eighteen sherds (78% of the total assemblage) was recovered from the test trenches. The highest frequency was located in the westernmost trench. A minimum of four vessels is represented, including one unidentifiable glaze-on-red sherd which may have been part of the Agua Fria G/R bowl found in Room 2. Fragments from two additional glaze vessels, one bowl and one olla, and one Blind Indented utility ware jar were recovered as well.

TABLE 9.76

LA 12519—CERAMIC TYPE AND TEMPER VARIABILITY

CERAMIC TYPE	FORM	TEMPER	ROOM 1	ROOM 2	EXTERIOR TRENCHES	TOTAL
Agua Fria G/R	bowl	scoria	–	1	–	1
Unidentified G/R	bowl	scoria	–	2	1	3
Unidentified G/Y	bowl	scoria	–	–	5	5
Unidentified G-P	olla	scoria	–	–	6	6
Blind Inden. Corr.	jar	andesite, scoria	–	2	6	8
TOTAL			0	5	18	23

Lithic Artifacts

A total of nine lithics was recovered from the test trenches. An unusually high percentage of these were milling implements, including one one-hand mano, two indeterminant mano fragments and one basin metate. Additional artifacts included three pieces of debitage, one piece of small angular debris and one piece of large angular debris.

1. Material Selection

All of the ground stone was manufactured from aphanite, an igneous material of unknown source area. The debitage and angular debris were manufactured from chalcedony (3 taxons) and basalt (1 taxon). These materials are locally available in the study area.

2. Manufacture

Little evidence of tool manufacturing activities was recovered during the excavation of the trenches. Although both pieces of small and large angular debris may be indicative of primary manufacture, the extremely low frequencies of debitage and the presence of cortex on only two artifacts, negate any interpretation concerning stage and character of reduction.

3. Tool Use

Both manos and a metate suggest the presence of milling activities at the site locations. One unretouched utilized piece of basalt with convex edge shape, exhibited unidirectional rounding. There was no other evidence of tool use.

Bone Artifacts

One olivella shell bead with a drilled hole was recovered.

Fauna

One mandible from a woodrat (*Neotoma* spp.) was

TABLE 9.77

LA 12519—LITHIC ARTIFACT CLASSES

MATERIAL TAXONS		Debitage	Small Angular Debris	Resharpening/ Retouch Flakes	Cores	Large Angular Debris	Choppers	Hammerstones	Facially Retouched Artifacts	Manos	Metates	Undetermined Ground Stone	TOTALS
ROOM 1, LEVEL 1													
Basalt:	3701	1	–	–	–	–	–	–	–	–	–	–	1
Chert:	1051	1	–	–	–	–	–	–	–	–	–	–	1
	1090	1	1	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	–	1	–	–	–	–	–	–	–	–	–	1
	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1340	1	–	–	–	–	–	–	–	–	–	–	1
Room Totals:		5	2	0	0	0	0	0	0	0	0	0	7
ROOM 2, LEVEL 1													
Obsidian:	3520	1	2	–	–	–	–	–	–	–	–	–	3
	3525	1	–	–	–	–	–	–	–	–	–	–	1
Basalt:	3701	11	4	–	–	–	–	–	–	–	–	–	15
	3050	2	–	–	–	–	–	–	–	–	–	–	2
Chert:	1050	4	–	–	–	–	–	–	–	–	–	–	4
	1090	2	–	–	–	–	–	–	–	–	–	–	2
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1053	3	–	–	–	–	–	–	–	–	–	–	3
	1091	3	–	1	–	–	–	–	–	–	–	–	4
	1214	1	–	–	–	–	–	–	–	–	–	–	1
	1215	1	–	–	–	–	–	–	–	–	–	–	1
	1340	1	–	–	–	–	–	–	–	–	–	–	1
EXTERIOR TRENCHES													
Basalt:	3701	1	–	–	–	–	–	–	–	–	–	–	1
Chalcedony:	1052	1	–	–	–	–	–	–	–	–	–	–	1
	1053	1	–	–	–	–	–	–	–	–	–	–	1
	1340	–	1	–	–	–	–	–	–	–	–	–	1
Totals:		3	1	0	0	0	0	0	0	0	0	0	4

recovered.

SUMMARY

LA 12519 was a two room Anasazi P-IV site location. The rooms were contiguous, one surface and the other semisubterranean. Both were badly eroded. The surface room encompassed 2.5 square meters of floor space and contained a hearth; the semisubterranean room encompassed 3.1 square meters of floor space with no discernable interior features.

A minimum of four glaze decorated vessels are represented by the sherds collected from LA 12519: 1) an Agua Fria Glaze-on-Red bowl with silvery irridescent mica flakes in a red slip: 2) an early Glaze-on-Yellow bowl; 3) a Glaze-Polychrome olla; and 4) a Blind Indented Utility jar, with friable brown clay body and local scoria and glassy andesite temper. All the glaze sherds, a total of 15, were tempered with Cerros del Rio Basalt scoria and glassy andesite from the Jemez Volcanics.

The red slip of the Agua Fria bowl with silvery mica is a common slip in White Rock Canyon and on the Pajarito Plateau in early glaze wares. Other glaze ware sherds have yellow or pink slips. The scoria temper is more finely grained than in most of the local glazes and the clay has a tendency to be friable, brown, and crumbly, suggesting these vessels may have been made at a small, local glaze site in the Southern Pajarito.

The best dates for occupation of this site, based upon ceramics present, are between A.D. 1350 and 1400.

LA 12519 is typical of many other P-IV phase sites within Cochiti Reservoir in that it consists of two contiguous rooms, one surface and the other semisubterranean. The surface room contained a hearth facility, and other evidence of food processing and consumption is represented by a basin metate fragment, a complete one-hand mano and two fragments, possibly from a single mano of indeterminate shape. The ceramic vessel inventory included a single corrugated jar, an olla and a bowl. Faunal remains from a cottontail rabbit and a woodrat may indicate minimal procurement of locally available small mammals for consumption in addition to foodstuffs which required milling prior to consumption. Milling implements and fragments were located outside rather than inside the room structures which might suggest occupation of the site during warmer months rather than during the winter.

The remaining artifact assemblage recovered from the site indicates very little investment into manufacture or use of stone tools. Although debitage and small angular debris from 13 different material taxons were recovered, only one of these (3701—basalt) was represented by more than five artifacts, and of the total assemblage only five artifacts were utilized. Four of these tools were recovered from the fill of Room 2, as was the majority of debitage and small angular debris present within the site.

LA 12519 thus does not seem to represent a locus of intensive or long term residence, and the small number of ceramic vessels recovered, while indicating a range of cooking, serving and short term storage, suggests the total number of personnel occupying the site at any given time was small. While tempers employed to manufacture all four vessels are locally available within the study area, the presence of an olivella shell indicates some degree of participation by the site occupants with a greater interregional system of trade or redistribution.

LA 12524

LA 12524 consisted of five non-contiguous circular and semi-circular historic structures. The site was located just north of the mouth of White Rock Canyon on the west bank of the Rio Grande River, at an elevation of 5320 ft (1621.5m). The site was situated at the base of a steep talus slope which faced to the northeast. The physiographic situation of the site itself was characterized by alternating ridges and erosional channels flowing to the northeast. South of the site was a meadow and directly below the site was the first bench of the Rio Grande. LA 12518 was located in the meadow to the south, and sites LA 12517 and LA 12519 were situated within a 30 meter radius of LA 12524.

The vegetative structure was characterized as an open juniper savanna. The dominant species were juniper, grasses (including side oats and grama) and occasional snakeweed.

All rooms interiors were excavated. No exterior tests were made. Although three natural strata were defined in Room 1, all cultural materials were removed from a single stratum (level 1). In all other rooms levels correspond to natural strata.

Architecture

Room 1:

Room 1 was located on the talus slope just north of the meadow bench. The structure was situated four meters south of a drainage channel running east toward the river.

Shape: Circular surface structure.

Orientation: Undetermined due to circular shape of the structure.

Condition: Room walls were standing and in fairly good condition.

Interior Room Dimensions: Room 1 had a north-south axis of 2.60m and an east-west axis of 2.70m. The walls varied in width from .50m on the east to .55m on the north. Wall heights ranged from .50m on the east to 1.60m on the north.

Walls: All four walls were similar in construction and are described together below.

Type of Elements: Local basalt boulders and clasts.

Size of Elements: Mean size of the wall elements was 45cm x 25cm.

Placement and Construction of Elements: Elements were horizontally dry stacked. The long axes of the elements corresponded to the long axis of the walls.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: All elements were overlapping and one element wide.

Chinking: No chinking was present.

Corners: Corners were rounded and interlocking.

Plaster: No plaster was evident.

Entrances: No doorway was found.

Floors: No definite floor was discernable. Hard-packed earth was apparent in some areas at the level of the foundation stones. In other areas the fill was powdery.

Roofing: No evidence of roofing was present.

Interior Features: No interior features were found.

Room Fill: The room fill was between 20cm and 30cm in depth and was composed of hard clay that was sterile of cultural material. At 30cm below the surface, a 40cm x 40cm x 3cm layer of ash was found. Associated with this lens were a few lithics and one burned and one un-

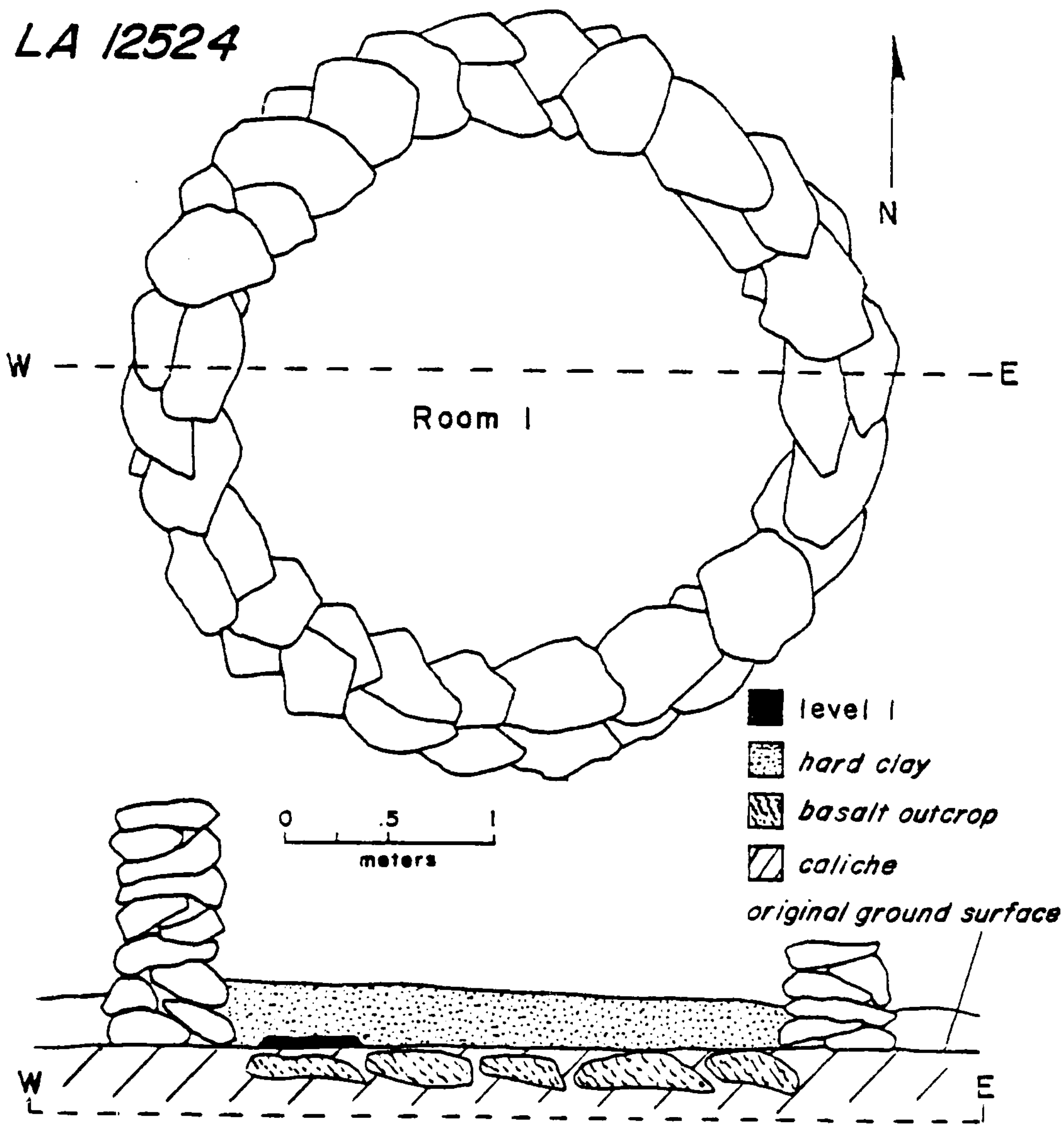


FIG. 9.56 LA 12524—Room 1, plan view and cross section

burned bone (level 1). This stratum was underlain by a sterile layer of caliche which overlaid a basaltic outcrop.

Rubble: Because of the standing height of the walls, little rubble was present in the room fill.

Exterior Fill: No exterior areas were excavated.

Exterior Features: None observed.

Room 2:

Room 2 was located approximately 12 meters north-east of Room 1, on the south side of a narrow drainage.

Shape: "D" shaped surface structure.

Orientation: Due to shape orientation could not be determined.

Condition: Room walls were standing and in fair condition.

Interior Room Dimensions:

	Length	Width	Height
North	1.30m	unknown	unknown
South	1.50m	.90m	1.30m
East	1.13m	.44m	.77m
West	2.00m	.70m	1.09m

Walls: The north, east and west walls were of similar construction and are described together below. The south wall was made of talus boulders.

Type of Elements: Local basalt boulders and clasts.

Size of Elements: Elements comprising the north, east and west walls were large exhibiting a mean size of 63cm x 39cm. The south wall was comprised of even larger elements, which averaged 1.52m x .39m in size.

Placement and Construction of Elements: The south wall incorporated the largest boulders from the outcrop measuring 1.52m x .89m. Other walls were constructed

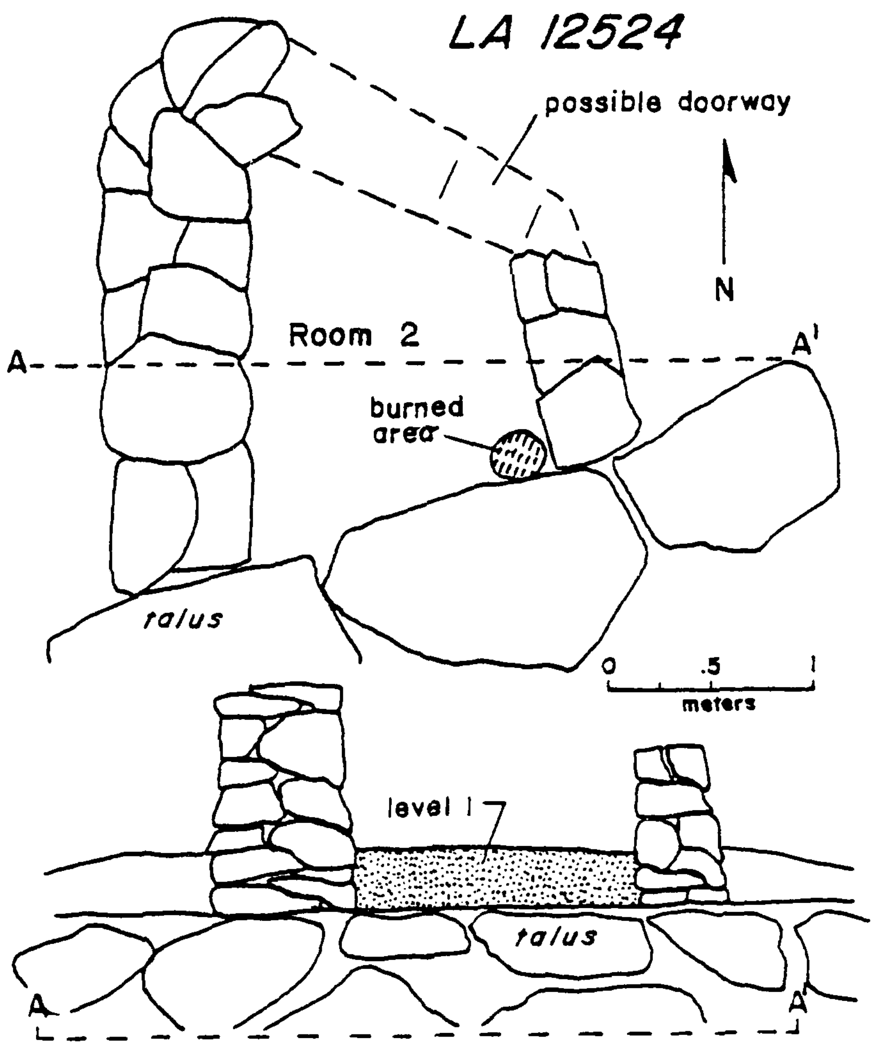


FIG. 9.57 LA 12524—Room 2. plan view and cross section

of smaller elements. Elements were horizontally stacked with their long axes corresponding to the long axis of the walls. The walls were dry laid.

Shaping of Elements: Unmodified.

Wall Facing: Elements were placed such that both interior and exterior wall surfaces were evenly faced.

Courses: One course of basalt clasts was laid horizontally on top of the large basal boulders in the south wall. Other walls were between one and two elements wide with no vertical coursing.

Chinking: No chinking elements were found.

Corners: The east and west walls abutted the south wall. The northeast corner was interlocking, and the northeast corner was eroded.

Plaster: No plaster was evident.

Entrances: No evidence for a doorway was found. However, in the northeast corner of the structure there was an opening 45cm wide where no wall elements were found. They may have been removed after abandonment or they may represent a doorway.

Floors: No floor was found.

Roofing: No evidence of a roof was found.

Interior Features:

Burned Area: The only feature was a burned area in the southeast corner of the structure. The area was approximately 25cm in diameter. No fire-cracked rock was found associated with this feature although one burned bone was recovered.

Room Fill: The fill consisted of 30cm of sandy loam which was sterile. This stratum was underlain by basalt talus. No cultural material was recovered from the fill.

Rubble: Very little rubble was present.

Exterior Fill: Exterior portions of Room 2 were not excavated.

Exterior Features: None.

Room 3:

Room 3 was located on the south side of the erosional drainage, north of Rooms 1 and 2.

Shape: Oval circular surface structure.

Orientation: Undetermined due to shape.

Condition: Room walls were standing and in fair condition.

Interior Room Dimensions: The north-south axis of Room 3 was 2.86m and the east-west axis was 1.83m. Wall widths ranged from .43m on the east and west to .49m on the north. Wall heights ranged from 1.22m on the west to .74m on the south.

Walls: All four walls were of similar construction. Any differences will be noted below.

Type of Elements: Local basalt boulders and clasts.

Size of Elements: Basalt clasts ranged in size from 43cm x 40cm to 65cm x 30cm. There was no distinction in size elements from foundation stones to upper elements.

Placement and Construction of Elements: The builders utilized the basalt outcrop for part of the wall construction, and locally available basalt clasts for the remaining walls. The west wall was constructed through abutting large clasts of basalt to an existing boulder and forming the north and south walls. Elements were horizontally dry stacked.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: Elements were overlapping and stacked a single element wide.

Chinking: No chinking was present.

Corners: The northwest and southwest corners abutted the talus; the others were rounded and interlocking.

Plaster: No plaster was found.

Entrances: No doorway was found.

Floors: A poorly defined floor was located 20cm below the surface which conformed to the slope of the surrounding terrain. In some areas the floor was hard packed, whereas in other areas it was not so clearly defined.

Roofing: No roofing materials were recovered.

Interior Features: No interior features were found.

Room Fill: The fill measured 20cm in depth and was composed of a sandy loam top soil. It was completely sterile of cultural debris and was underlain by the basalt outcrop.

Rubble: Very little wall rubble was present.

Exterior Fill: No exterior room grids were excavated.

Exterior Features: None.

Room 4:

Room 4 was located approximately 3 meters east of Room 3.

Shape: Circular surface structure.

Orientation: Could not be determined due to shape of structure.

Condition: Structure appears to be intact but lack of cultural material implied that it had been potted.

Interior Room Dimensions: Room 4 had a north-south axis of 1.47m and an east-west axis of 1.90m. The walls ranged in width from .45m on the east to .50m on the north. Wall height ranged from .84m on the south to 1.10m on the east.

Walls: The south wall was built on a basalt outcrop. All other wall construction was similar.

Type of Elements: Local basalt boulders and clasts.

Size of Elements: The south wall was comprised of extremely large elements averaging 65cm x 40cm. The east, west and north walls were constructed of elements 45cm x 30cm x 10cm in size.

Placement and Construction of Elements: The south wall was made of the talus. The north, east and west walls were constructed from basalt clasts stacked horizontally with their long axes corresponding to the long axis of the walls, for the most part. All elements were dry laid.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: The elements were overlapping and one element wide.

Chinking: No chinking was present.

Corners: The southeast and southwest corners abutted the talus; the others were rounded and interlocking.

Plaster: No plaster was evident.

Entrances: No entrance was found.

Floors: No floor was discernable.

Roofing: No roofing materials were found.

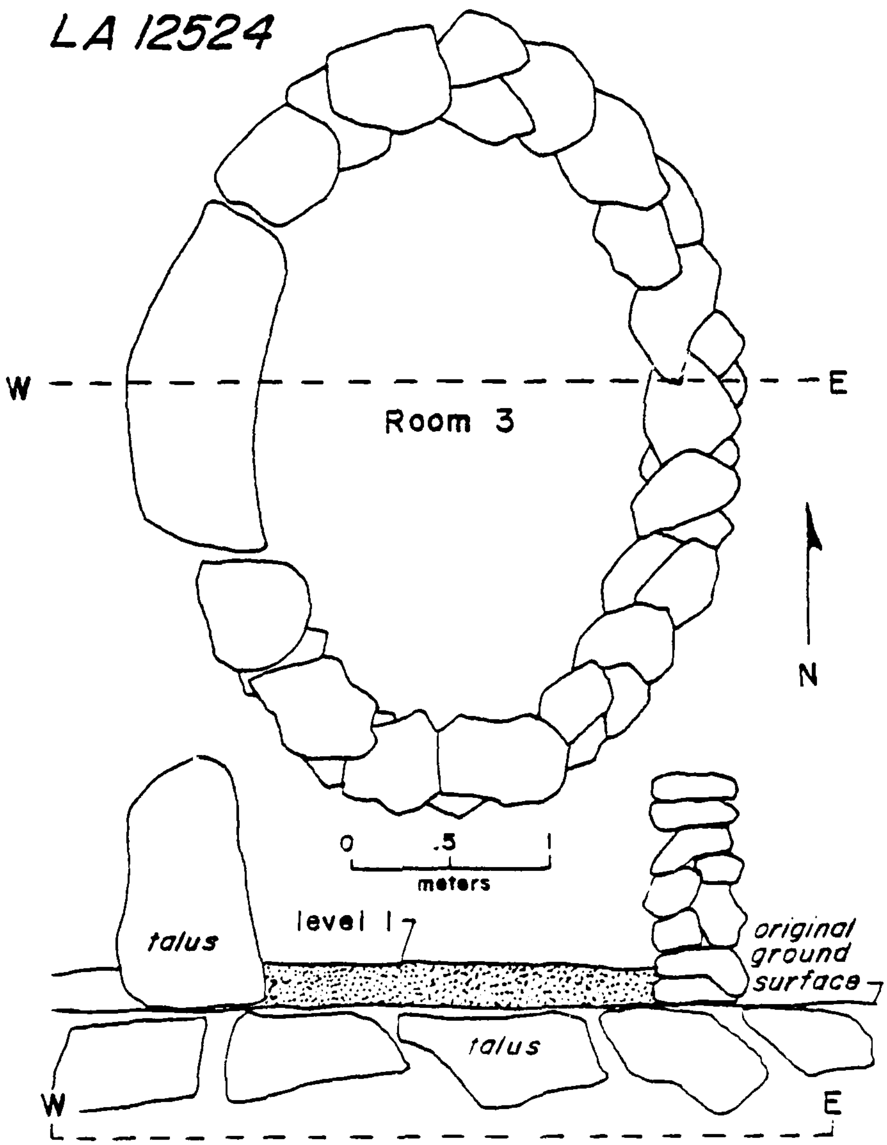


FIG. 9.58 LA 12524—Room 3, plan view and cross section

Interior Features: No features were found within the structure.

Room Fill: The fill was similar to that found in Room 3: shallow, sterile and lying on the talus.

Rubble: A minimal amount of rubble was present.

Exterior Fill: No exterior room grids were excavated.

Exterior Features: None.

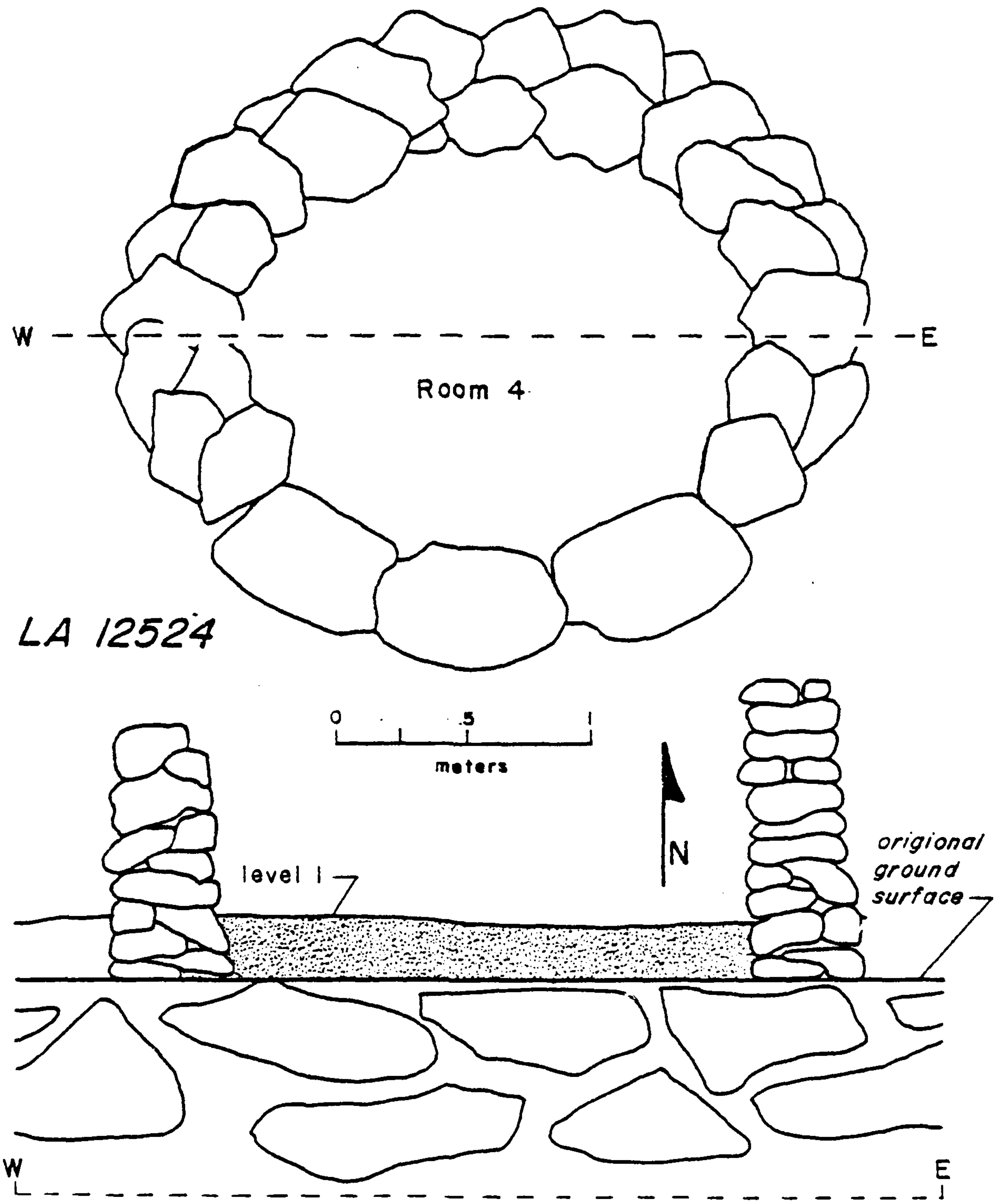


FIG. 9.59 LA 12524—Room 4, plan view and cross section

Room 5

Room 5 was a rock shelter located 8 meters from Room 3, up the talus slope, in the same drainage.

Shape: Rock shelter.

Orientation: The orientation could not be determined. The rock shelter had a northwest exposure.

Condition: The east wall was partially eroded.

Structure Dimensions: The overhang was one meter deep. East-west dimensions were 1.45m and the clearance was .80m.

Walls: A wall extended from the shelter on the east to the northeast. The rest was comprised of natural walls.

Type of Elements: Local basalt clasts.

Size of Elements: The east wall was constructed of medium sized basalt clasts measuring 20cm x 22cm x 7cm.

Placement and Construction of Elements: The east wall elements were dry laid and stacked horizontally with their long axes parallel to the long axis of the wall. This wall was abutting the outcrop and formed the enclosed shelter.

Shaping of Elements: Unmodified.

Wall Facing: Wall surfaces were not evenly faced.

Courses: Elements were overlapping and laid one element wide.

Chinking: No chinking was present.

Corners: The east wall abutted the outcrop.

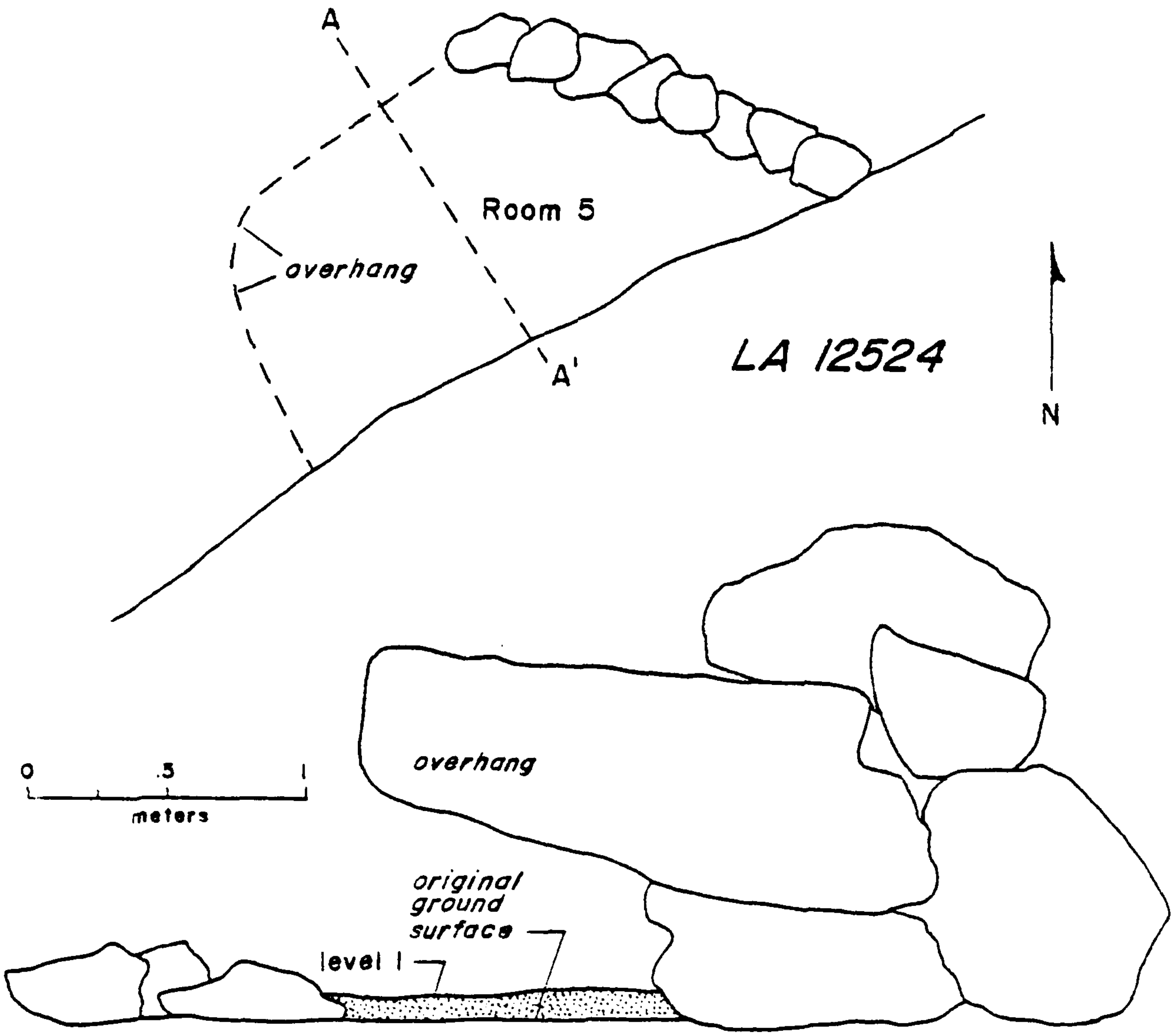


FIG. 9.60 LA 12524—Room 5, plan view and cross section

Plaster: No plaster evident.

Entrances: No doorway was found.

Floors: A floor was not discernable.

Roofing: A natural overhang provided a partial roof.

Interior Features: No interior features were found.

Room Fill: The fill was comprised of a 10cm thick layer of fine grained sandy loam. No cultural material was recovered from the fill.

Rubble: A minimal amount of rubble was recovered.

Exterior Fill: No exterior room grids were excavated.

Exterior Features: None.

Artifactual Assemblages

Three lithic artifacts and eight bone fragments were recovered during the excavations of LA 12524. All of these materials were derived from a small lens of ash in Room 1 (level 1) which directly overlay a basalt outcrop.

Ceramic Artifacts

No ceramics were recovered from the excavation of LA 12524.

Lithic Artifacts

Three pieces of unutilized debitage were recovered from level 1 of Room 1. Each was manufactured from locally available materials (3 taxons—2 chert and 1 chalcedony). Platforms were present on two of the pieces of debitage. No cortical surfaces were exhibited.

Bone Artifacts: none.

Fauna

Three individuals were isolated on LA 12524. One individual was represented by a domestic goat, *Capra hirca*. The second individual was identified as a domestic sheep or goat, and the third as a small mammal. All faunal remains were recovered from Room 1, level 1.

The faunal sample consisted of eight bone fragments. Although these bone fragments indicate that domestic animal resources were utilized, sample size makes further speculation difficult.

SUMMARY

Due to similarity in construction of many of the architectural features, it seems possible that these structures may represent a roughly contemporaneous occupation. There is, however, no substantive evidence to support this inference. The paucity of artifactual remains makes any attempt to interpret function impossible. The only outstanding feature from the material

TABLE 9.78

LA 12524
MEAT PACKAGES AND LONG BONE SHAFT FRAGMENTS FOR MINIMUM NUMBER OF INDIVIDUALS

		ELEMENTS REPRESENTED								
		LOW MUSCLE MASS					HIGH MUSCLE MASS			
TAXON	MINIMUM NUMBER OF INDIVIDUALS	Vertebrae	Pelvis	Skull	Mandible	Lower Leg	Ribs	Scapula	Upper Leg	LONG BONE SHAFT FRAGMENTS
Capra hircus (adult)	1			1						
Ovis spp./*Capra* spp. (immature)	1				1					
Small Mammal	1						1			
ADDITIONAL OVERLAPPING FAUNAL ELEMENTS										
Artiodactyla	1	2		1						
Medium-Large Mammal	1									2

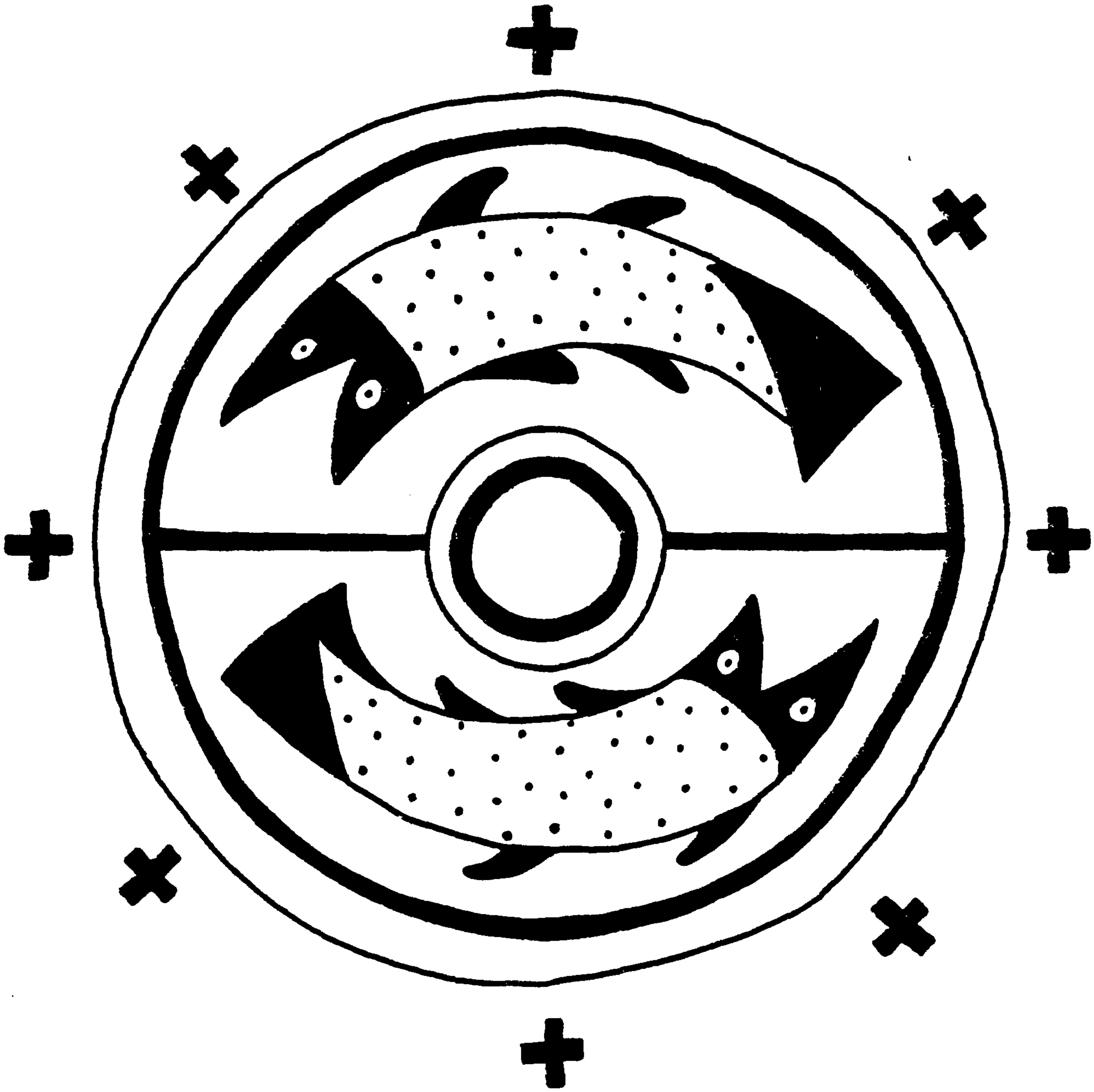
Number of Identifiable bones: 8

Percent of long bone shaft fragments: 25%

remains documented at the site is the first definable evidence of domesticated goat (*Capra hircus*) recovered from the project area excavations. The shape and construction of the features are suggestive of "Navajo" structures documented elsewhere in northern New Mexico (Schaafsma 1976).

The extreme paucity of artifactual debris of any kind indicates that habitation of the structures and the general site area was neither long term nor intensive in nature. The presence of domesticated fauna in one structure places that occupation within the Historic Period, but no more precise dates can be assigned.

APPENDICES



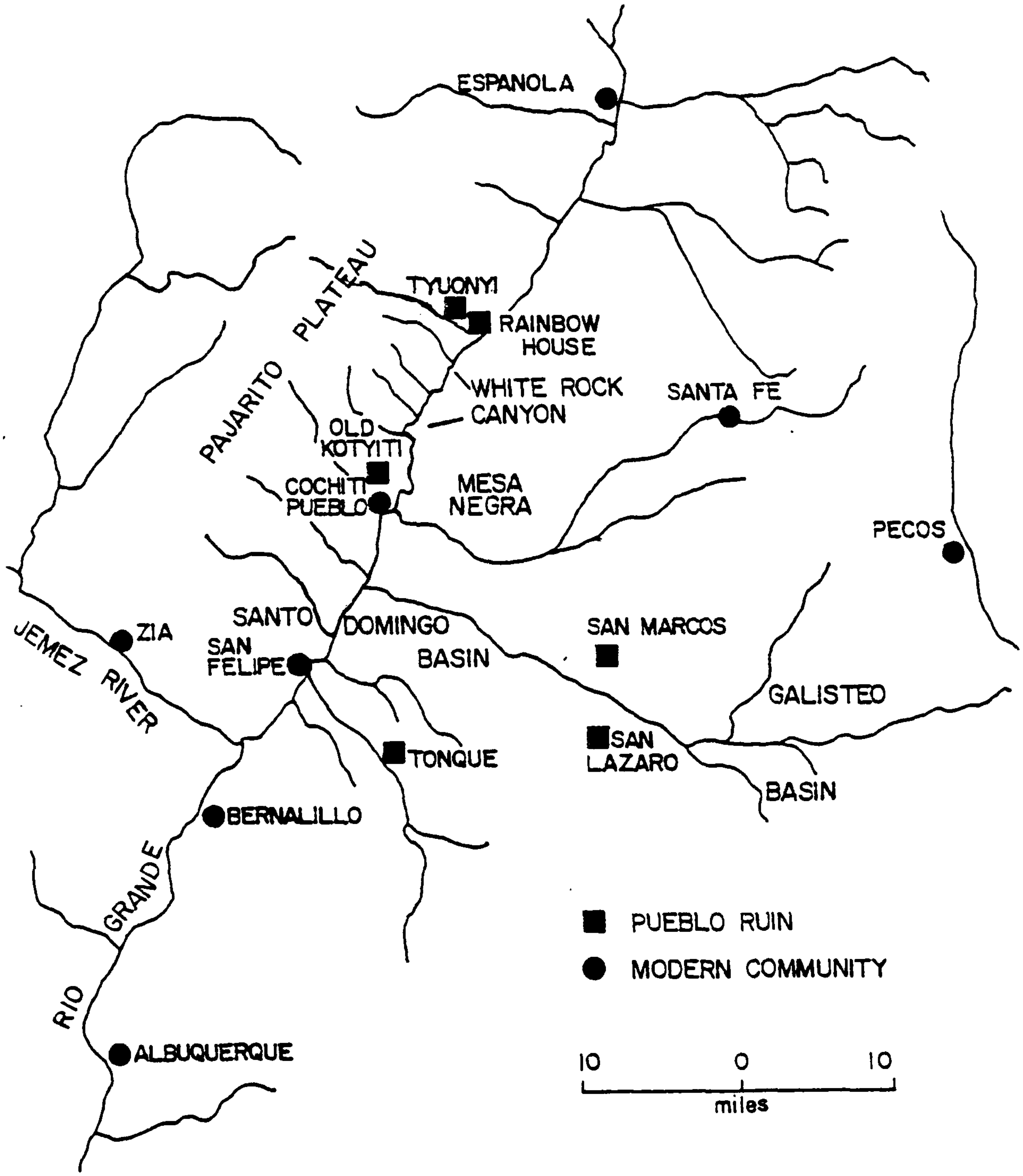


FIG. I.1 Major archeological sites in the Northern Rio Grande

Appendix I
New Dimensions in the Study of Prehistoric Pottery

A. H. WARREN

Editors' Note. The following paper was written as a result of research sponsored by the National Park Service and undertaken by the author for the Museum of New Mexico between 1967 and 1973. The paper was originally submitted to the Museum in 1973 as Laboratory of Anthropology Note No. 90. *The assumptions, approaches and information presented in the paper form the basis for much of the work undertaken by the author during the present Cochiti Reservoir Project. It is included here for this reason. We wish to extend our appreciation to Stewart L. Peckham, Museum of New Mexico, for allowing its publication in this volume.*

INTRODUCTION

The pottery of the prehistoric Indian, produced essentially from mineral resources, is one of his most durable artifacts. Potsherds provide the archeologist with valuable unwritten records of prehistory. The importance of ceramics in interpreting the past rests upon the premise that pottery reflects certain aspects of the culture and history of the people who produced or used it. The premise itself is seldom questioned, but new methods and guidelines for study and interpretation of ceramic evidence are constantly being sought.

In the Southwest where pueblo pottery-making attained high artistic and technological levels prehistorically, the archeologist has long been concerned with the classification and description of various wares. Although megascopic attributes have provided the basis for most of this work, microscopic studies made by Anna O. Shepard of the pottery of Pecos during the 1930's, laid a foundation for future investigations of Southwest ceramics (1936; 1942). She employed various analytical techniques in her technological studies, but the most valuable information was obtained through the petrographic analyses of temper. Crushed rock had been used for tempering materials in most of the wares, and it was possible to locate geologic sources and to separate trade from locally made wares.

When Shepard found that Glaze I pottery produced during the 14th century and the 17th century Glaze IV wares of the Pecos series were all intrusive to Pecos, Kidder pointed out:

> . . . we are faced with necessity for a drastic rearrangement of ideas concerning the status of the ceramic industry, not only at Pecos, but throughout the Southwest. It has always been assumed that potting was one of the regular household tasks of every Pueblo woman; that each town was in this regard self-sufficient. But if whole classes of pottery . . . were imported, we must postulate an extraordinary volume of trade and allow for a compensating outward flow of other commodities. Furthermore, we must believe that the production of vessels at the source of supply was much greater than was needed for home consumption; in other words, that rudimentary commercial manufacturing was practiced (Kidder and Shepard 1936:xxiii).

Glaze decorated pottery from sites near Cochiti Pueblo served as a basis for a study of the ceramics of the Middle Rio Grande that were produced between A.D. 1300 and 1700. Whole vessels and potsherds from six of the nine sites excavated by the Museum of New Mexico during the mid-1960's represented a full range of the local Rio Grande glaze ware groups (Tables I.1, I.2, I.3). The basic purpose of the study, which involved petrographic analysis of tempering materials, was to obtain information to aid in the interpretation of the early history of the Cochiti area.

The wealth of sherd material obtained from the six Cochiti sites gave hope that several hundred years of continuous ceramic development in that area could be traced. Initially the analysis began with sherds from the Alfred Herrera site (LA 6466), which is located on the west bank of the Rio Grande, a short distance north of Cochiti Pueblo. A complete range of glaze decorated pottery from Group A through E covered the period from A.D. 1325 to post-1500. Analytical methods suggested by Shepard (1965) were followed. In addition, rock samples from Cochiti and the surrounding area were collected and examined in an effort to locate the geologic sources of the tempering materials in the pottery (Warren 1968).

It soon became apparent that the ceramic evidence from the Herrera site and information about geologic sources were not adequate to answer the questions which arose during the study. Basalt scoria, a volcanic rock found in the Cochiti area, was found in a high percentage of the Glaze A Red sherds examined. The predominant tempering materials in later glaze types, however, were rocks that did not occur geologically in that area. In an effort to find out the meaning of the sudden changes in temper from one pottery type or group to another, the study was extended to other glaze sites in the upper Middle Rio Grande Valley, from Bernalillo north to Frijoles Canyon.

As sherd lots from site after site were examined, similar patterns of temper distribution appeared. Associated changes in clay types were also consistent. Could potters throughout the region have been obtaining raw materials from the same sources during certain periods of time and then producing vessels that were identical in technology, form, and design? The likelihood seemed remote. Consistency in the use of clay and temper at

TABLE I.1

CLASSIFICATION OF RIO GRANDE GLAZES
(modified from Mera 1933)

GROUP	TYPE NAME	EST. DATE OF MANUFACTURE
pre-A	Los Padillas G-P	?1300 to 1315?
A	Arenal G-P	1315 to 1350?
	Agua Fria G/R	1315 to 1425
	San Clemente G-P	1325 to 1425
	Cieneguilla G/Y, G-P	1325 to 1425
B	Largo G/Y, G-P	1400 to 1450
C	Espinoso G-P	1425 to 1500
	Pottery Mound G-P	1400 to 1490
D	San Lazaro G-P	1490 to 1515
E	Puaray G-P (early)	1515 to 1600
	Puaray G-P (late)	1600 to 1650
E and F	Pecos G-P	1600 to 1700
F	Kotyiti G/Y,G/R or G-P	1650 to 1700

two large villages, and the location of the respective geologic sources, indicated that these were ceramic production and trade centers. Potters of San Marcos Pueblo in the Galisteo Basin used augite latite from a nearby outcrop of Espinaso volcanics, while potters at Tonque Pueblo chose hornblende latite, a mineralogical variation of the Espinaso volcanics which occurs in that area. One must conclude that glaze wares with these tempering materials found at the Cochiti sites and elsewhere in the upper Middle Rio Grande were trade wares.

The data obtained by no means provided a complete picture of the history of the glaze wares of the area. Pottery from many sites still remains to be studied, and many questions concerning sources remain to be answered. Nevertheless, the patterns of ceramic evolution that emerged led to the formulation of many new analytical procedures and interpretive guidelines for ceramic research. In the following pages, some of the highlights of the study will be discussed and a summary of the methods and guidelines will be included. The main emphasis will be in the areas of archeological research, giving illustrations of how the analytical methods can be applied specifically and perhaps uniquely.

LOCATION OF PRODUCTION CENTERS AND TRADE INDUSTRIES

The distribution patterns of tempering materials within ceramic types in the upper Middle Rio Grande enabled identification of centers of pottery making on a temporal and areal basis. A high percentage of a temper type at a site, decreasing with increased distance away from the site, indicates local production. The areal concentration of basalt scoria temper found in Agua Fria Glaze-on-Red sherds in the Cochiti area suggests local manufacture, although in this case, no specific sites of manufacture are indicated. Basalt scoria, a pyroclastic volcanic rock, is abundant in the Cochiti area on Mesa Negra and on the eastern edge of the Pajarito Plateau bordering White Rock Canyon. With one exception, high percentages of basalt scoria also were found at the Pajarito sites. The possibility that potters from several sites were using the same materials must be considered.

An anomaly occurs at Yaposhi (LA 250), as only 22 percent of the Agua Fria sherds contained crushed scoria. Although only 124 rim sherds were available for examination, the low percentage of scoria temper is accompanied by two other ceramic trends: (1) a relatively high percentage of Glaze-on-Yellow pottery, and (2) a corresponding high incidence of intermediate volcanic rocks of local origin used as temper. When such an anomaly occurs, search for additional evidence of ceramic or cultural traditions would be in order.

Too often in the past, however, a high percentage of a certain temper type at a site has been accepted as proof of local manufacture. The fallacy of this assumption is illustrated by the high percentages of augite latite in Glaze A and B Yellow sherds and hornblende latite in the middle glaze types at many sites in the Middle Rio Grande Valley. Regional studies have shown that the former were produced at San Marcos Pueblo (LA 98) and the latter at Tonque Pueblo (LA 240), and that both of the pueblos were major production centers. Trade wares from these centers have not only been found at nearby villages in the Rio Grande Valley, but far to the south in the Lower Rio Grande, in the Tewa villages to the north, and sparsely on campsites on the High Plains hundreds of miles to the east.

The assumption must be made that potters used source materials found close to their homes whenever possible. Suitable rocks for temper were almost always near at hand. If not, then crushed sherds would do. Slip clays and mineral pigments were not as ubiquitous and were probably imported. Body clays may also have been transported some distance, although it seems more than coincidental that many large production centers, such as Tonque, San Marcos, and Pecos, were situated virtually on top of large clay deposits.

Apparently the glaze potters easily adapted to their environment, even though they may have been conservative in their methods. The potters of San Marcos and Pecos, for instance, prefered white pots. Since the clay deposits near their villages were red burning clays, they applied white or cream slips to the pots to achieve the desired color. The Glaze A Red potters at Tonque, on the other hand, imported red slip clay to cover up the buff burning clay from the local clay pits. If a potter moved to a new area, she immediately looked for new body clays and suitable rocks to crush for temper. There is little evidence that the glaze potters returned to a former home to obtain these items, at least in any quantity.

Not all production centers engaged in trade or export. The Zia villages produced glaze decorated wares for over 350 years, but very few pots found their way outside the Jemez River Valley where they were made. Trade to the Jemez villages was common, though. Pecos Pueblo (LA 126) made glaze pottery for 200 years, before it became a trade center in the 17th century. Pottery that probably was made in the Tiguex villages near Bernalillo is rarely found outside that area.

Production and trade centers changed from time to time, as shown by changes in distribution of temper types throughout the glaze sequence. Discovery of new

source materials, or the depletion of the old, strife among villages or tribes, drought, famine, or other disasters, may all have played a part in the rise and fall of the ceramic centers. As soon as one ceramic center declined, another arose elsewhere to take its place. It is apparent that the evidence of ceramic trade in the Rio Grande is only one facet of a thriving economic system that probably developed long before the Rio Grande glazes were first made and continued long after their disappearance.

Judging from the wide variety of temper materials in Glaze A Red pottery, the largest number of production centers existed during this period in the upper Middle Rio Grande. Trade centers in the Santo Domingo Basin near San Felipe and Cochiti and in the Galisteo Basin at San Marcos Pueblo are indicated. Many other villages were making and exporting glaze painted pottery during this time, but not in large quantities.

Sometime during the 1300's, the Galisteo villages began to produce Glaze A Yellow pottery, and soon a brisk trade in pottery was under way. San Marcos Pueblo seems to have been the source of most of the pottery that found its way out of the Galisteo Basin for at least one hundred years. Cieneguilla Glaze-on-Yellow and Glaze-Polychrome soon evolved into the Glaze B types, Largo Glaze-on-Yellow and Glaze-Polychrome. These yellow slipped wares were rarely reproduced in other areas with the exception of Cochiti, the Southern Pajarito, and Pecos villages.

By early Glaze C time, around A. D. 1450, the ceramic business in the Galisteo Basin was falling off, but the potters of the Tonque Valley were busy building up their trade industry. The Tonque wares monopolized the trade industry in the upper Rio Grande Valley until the abandonment of the Tonque Pueblo near the end of the 16th Century (Warren 1970). Many other villages had either given up making glaze decorated pottery by this time, or were keeping what they made for their own use.

After Tonque Pueblo was abandoned and the first Spanish colonists had arrived in A. D. 1598, centers of production of glaze pottery again became diffused. The villagers of the Southern Pajarito Plateau moved down into the Espanola Valley, to Cochiti, or elsewhere. Residents of several villages in the Santo Domingo Basin left their centuries old homes and moved elsewhere. Soon Pecos, San Marcos and other Galisteo villages, San Felipe, and Cochiti, took up the manufacture and trade of glaze pottery. At the same time, the needs of the newly arrived Spanish colonists gave rise to a new ware, Salinas

TABLE I.2

MAJOR LOCAL TEMPERING MATERIALS AND GLAZE GROUPS PRESENT FOR SITES IN THE COCHITI AREA

SITE NO.	NAME OF SITE	GLAZE GROUPS	MAJOR TEMPER TYPES PRESENT
*LA 9154	Ojito de Canoncito	A - C	Basalt scoria; olivine basalt
LA 249	Tashkatze	A - C	Basalt scoria; andesitic and rhyolitic tuffs minor, olivine basalt
LA 5137	Caja del Rio	A - C	Basalt scoria; rhyolite tuff
*LA 70	Pueblo del Encierro	A - E	Scoria; andesitic and rhyolitic tuffs minor
*LA 6455	Alfred Herrera Site	A - E	Scoria; andesitic tuffs; volcanic sandstone
LA 35	Pueblo Canada	A - E	Scoria; andesitic and rhyolitic tuff; olivine basalt
*LA 6178	Torreon Site	A - E (?), F	Scoria, rhyolitic and andesitic tuff; sandstone
LA 126	Cochiti Pueblo	A - F	Scoria; rhyolitic and andesitic tuff; vitrophyre
LA 3444	Kuapa	A - E, F	Scoria, rhyolitic and andesitic tuffs and vitrophyre
*LA 591	Las Majadas	F	Rhyolitic tuff
*LA 34	Cochiti Spring	F	Rhyolitic tuff
*LA 295	"Old Cochiti"	F	Rhyolite tuff; andesite; vitrophyre; crystal pumice (minor)

*Excavated sites

TABLE I.3

MAJOR CENTERS AND PERIODS OF TRADE FOR RIO GRANDE GLAZES
(after Warren 1970)

CENTERS OF TRADE AND GLAZE TYPES	ESTIMATED PERIOD OF TRADE
San Felipe area (Agua Fria, San Clemente)	1315 - 1350
San Felipe area (Puaray, Kotyiti)	1600 - 1680
Albuquerque area? (Agua Fria, San Clemente)	1315 - 1350
Cochiti area (Agua Fria, San Clemente)	1315 - 1400
Los Lunas or Pottery Mound (Agua Fria, San Clemente, Pottery Mound G-P)	1315 - 1490
San Marcos Pueblo (Cieneguilla, Largo, Espinoso)	1350 - 1475
Misc. Galisteo Pueblos (as above)	1350 - 1475
Tonque Pueblo (Espinoso, San Lazaro, Puaray)	1425 - 1550
Abo Pueblo (Agua Fria, Espinoso, San Lazaro, Puaray, Kotyiti)	1350 - ca.1675
San Cristobal Pueblo? (Glazes C to F)	1450?-1680?
San Lazaro Pueblo (Puaray, Kotyiti)	1600?-1680
Pajarito Plateau (Puaray)	1500 - 1600
Cochiti Pueblo (Puaray, Kotyiti)	1550 - 1680
Quarai Pueblo (Kotyiti)	1600 - ca. 1675
Zia Pueblo (Kotyiti)	after 1650
Pecos Pueblo (Pecos Polychrome)	1600 - 1700

Red, which was basically undecorated glaze pottery. A favorite form of the Salinas Redware was the soup plate, unknown in the Southwest before the arrival of the Spanish. The glaze potters also produced, to order, such items as candlesticks, chalices, and other altar furnishings. Depending upon the village in which the redware was made, the temper material and the clay were the same as in glaze decorated pottery. Most of the redware has been found on 17th Century Spanish sites, although after the Pueblo Revolt in 1680, it became prevalent at Pueblo villages, as the production of glaze wares sharply declined.

The 17th century had marked a period of degeneracy of the glaze wares. The quality of the paint declined, becoming runny and uncontrolled. Slips became streaky and uneven. Demands upon the time and labor of the Indians for constructing missions and growing crops for the Spanish colonists undoubtedly contributed to the decline of the glazes. Potters who were forced to relocate may have had inferior source materials to work with. There is archeological evidence that the Spanish took over one of the lead mines, where the Pueblos had been obtaining galena for producing the lead glazes, although at least one lead mine was being worked by the Indians from San Marcos in the 17th century (Warren 1971; 1972). There is a reference to Pecos villagers arriving in Santa Fe in 1694 with glaze pots to sell, but there is no evidence that glaze pottery was produced after A. D. 1700 (Espinosa 1942:198).†

CLASSIFICATION AND CHRONOLOGY REVISITED

Petrographic analysis of ceramics has revealed some of the pitfalls of ceramic classification and typology, and at the same time has pointed the way to improved methods of establishing typologies and utilizing them in archeological interpretations.

Classification of Southwestern pottery has traditionally been based upon visual, megascopic attributes. The geographic distribution of types has been a major concern, but the actual place of manufacture has usually not been considered when defining a pottery type. As a result we find pottery types that change names as they cross state or international boundaries, or even go over the hill. Alien sherds happily fraternize with the natives because the two are megascopically similar.

†In 1975 late glazeware sherds were found in White Rock Canyon and appear to be contemporary with 18th century occupations.

The original classification of the Rio Grande glaze wares was based mainly upon rim forms, surface colors, and the presence or absence of matte red paint (Mera 1933). At Pecos Pueblo, Kidder (1936) established a classification for the local wares, although subsequent work by Shepard (1936) showed that almost all of the Glaze I Red and Glaze VI vessels were made elsewhere. Furthermore it seems likely that the red-slipped Pecos Glaze IV vessels were produced by new arrivals at Pecos and were not the result of the orderly evolution of pottery tradition at this pueblo (Kidder 1936:617). The work of Kidder and Shepard at Pecos and the more recent studies of the Rio Grande glazes in connection with the Cochiti Project have provided evidence that each pottery manufacturing center may have had its own sequence of pottery traditions. For instance, Pecos Glaze Polychrome with its distinctive rim form was made only by Pecos potters. The contemporary Kotyiti Glaze-Polychrome, with its high thin rims, was made in the Rio Grande villages, but never at Pecos.

Unsuspected areal differences within H. P. Mera's 1933 glaze series (Table I.2) appeared during the Museum of New Mexico study of the upper Middle Rio Grande glazes, suggesting local developments at pottery centers:

1) San Lazaro Glaze-Polychrome made at Tonque Pueblo was often the only Glaze D type found on numerous sites that had local Glaze C pottery. The assumption here must be that the Tonque "D" rim evolved earlier at Tonque that it did in other areas.

2) The outside rim beveling of Glaze D and E vessels and pink and orange surface colors also appear to be characteristic of the Tonque Pueblo. Occasional exact copies made at other sites suggest population shifts, as they are often associated with newly settled villages, such as San Lazaro (LA 91), or newly built kivas, as at Pueblo Encierro (LA 70) and Tyuonyi (LA 82).

3) Red slips and contrasting rim colors are a feature of Zia pottery throughout the glaze periods.

4) The cream colored slips of glaze-on-yellow types and the thickened rims of Largo and Espinoso developed in the Galisteo Basin.

5) White slipped duochrome vessels are a characteristic of Glaze F period at San Cristobal in the Galisteo Basin, while contemporary vessels at Cochiti and San Felipe were white or buff-surfaced polychromes.

These are only a handful of the areal differences that exist in the sequence of glaze decorated wares. Since the initial purpose of the temper analyses was to pinpoint pottery making centers, the observation of the differences in slip colors, designs and paints or vessel form was incidental. Much more work remains to be done in isolating and defining variations within a type or glaze group from village to village, and to determine what cultural, economic, or technological significance these variations may reflect.

The classification system for glazes devised by Mera (1933) has proven to be an adequate and flexible framework within which the archeologist or the analyst can work. Mera's sequence was based upon pottery from a wide range of sites in the Rio Grande Valley. He used macroscopic observations to establish types, which were then arranged within a chronological framework established by dendro dates. It is fortunate that he did not use temper as a criterion in his classifications, as this would lead to a proliferation of types that would only hinder the researcher in his efforts to interpret the ceramic records. In the study of the Cochiti pottery, the usefulness of two classification systems, one based upon cultural or technological attributes, such as rim form, vessel shape, and surface color, and the other reflecting environmental influences, in particular temper, was well proven.

Although it is important to recognize a pottery sequence for each production center or temper type, it is also important to discuss local variations within a broad classification system, such as Mera's Rio Grande glaze sequence. Since areal studies are needed to utilize fully the data that are not provided by potsherds, comparisons and cultural relationships can best be found within the broader classification. Kidder's system at Pecos becomes unwieldy as it incorporates one group, Glaze V, which is unique to that village, two groups, Glaze I and VI, which were tradewares, and one group, Glaze IV, which reflects outside influences although it was produced locally. When classification becomes too narrow or specific, it may serve provincialism, but little else. However, if a formal pottery sequence for a specific pueblo or area seems necessary, it should ideally include locally made pottery only. Thus, the Pecos sequence would include Galisteo Black-on-White, and Glaze groups II, III, IV, and V.

The practice of using temper as a sole criteria in setting up a new type or series should be discouraged. The small grain size of many temper fragments requires a microscope for accurate identification in most cases. Also, rocks used for tempering materials have already been classified by petrographers and there is no need to set up another taxonomic system for these geologic materials, although descriptive adjectives might be helpful at times, such as "Pecos" sandstone or "Zia" basalt. If we accept the practice of naming a new type each time a new production source is located, we will soon find that regional and cultural relationships are obscured. In time, there would be an infinite number of "types." but very little system. Actually, most local variations of a type, involving such factors as form, slip colors, designs as well as temper, can be described within the existing type; for instance: "Late San Lazaro Glaze Polychrome vessels made at Tonque Pueblo have (1) orange slips, (2) outward beveled rims, and (3) hornblende latite temper."

Chronological Refinements

Just as temper can be used to identify a production source and to establish logical classification sequences, so can it aid in improving chronologies. Once tied into a chronological sequence, temper types or trade distribution patterns can be useful for dating purposes. Since the Rio Grande glaze types have been based largely upon rim form, in the past it has not been possible to use body sherds to identify types. With current knowledge of temper in the glazes, manufacturing centers, and trade patterns, many of these body sherds can now be identified and dated. For instance, Rio Grande glaze sherds are occasionally found on sites on the Plains, but very few of these are rim sherds. Since we now know what villages were producing glaze wares for trade during certain periods, relative dates for glaze body sherds can be estimated. If a potsherd is found to contain San Marcos augite latite and it is known that this village produced trade wares mainly during the period between A. D.

1375 and 1450, a fairly accurate occupation date for a site can be established.

Relative chronologies can also be established within a site. In the Cochiti area, it appears that fine-grained basalt and crushed sherd temper may have been used earlier during Glaze A period than crushed scoria. Two contiguous pitrooms and a kiva at Pueblo del Encierro (LA 70), a large glaze site excavated at Cochiti, have almost identical temper distributions in the Glaze A Red sherds, which have high percentages of sherd and basalt temper. In another part of the pueblo, two later pitrooms produced Glaze A Red sherds with a low percentage of sherd temper and correspondingly higher percentages of basalt scoria temper than in the first room cluster. Cultural and temporal affinities are indicated by the similar temper distribution patterns in each of the two room clusters. Since Glaze A Red types were made over a period of one hundred years, changes in temper distributions should be expected during that time period. Temper differences may be very useful in establishing chronological seriation within a type, and should be especially helpful with long-lived pottery types.

Stratigraphic markers with a short temporal span may also be identified. At Pueblo del Encierro (LA 70), Puaray Glaze-Polychrome with exterior beveled rims were found in a kiva with tree ring dates between A.D. 1515 to 1520 (Robinson, *et al* 1972). Almost all the pottery was intrusive from Tonque Pueblo (LA 240). Since good tree ring dates are scarce, even in large excavations, pottery that can be closely dated and identified by source can be valuable for cross-dating.

Environmental Influences

Once the archeologist has established who made what pottery where and when, he may then be able to distinguish between its charac[illegible]istics which are culturally significant and those wh[illegible]re influenced by the natural resources available. T[illegible] division is needed if pottery is to be used to establish cultural relationships through space or time. Environmental influences must be understood before certain problems concerning ceramic evolution and diffusion can be solved.

How may the local source materials of a particular area have affected ceramic tradition or technology? What attributes of a vessel will be taken along to a new home in another area, and which will be left behind as reflections of the former environment? How may the distribution of source materials influence settlement patterns and economy? What mark has the prehistoric potter left upon his environment? These are not questions that can be easily answered, and in many instances they will never be. Directly and indirectly, petrographic studies have provided some guidelines for recognizing attributes of prehistoric pottery that may have been influenced by environmental factors.

In selecting a rock to use for temper, the prehistoric potter in a new area may well have considered such factors as grain size, angularity, friability, and absence of undesirable impurities, but it is unlikely that she was concerned with the mineralogy or petrography of the rock. While the glaze potter was still testing various rocks for suitable material, she may have been producing pottery using crushed sherds for temper. Contrary to popular belief, sherd temper did not disappear from use in Glaze A time, but occurred sporadically in small quantities in the earliest glaze types present at villages that were established in later Glaze periods. Once a suitable rock was found, it became part of the ceramic tradition of that particular village for as along as it was occupied.

In what way might local mineral resources affect the selection and use of paints, slip clays, or body clays? For perhaps 400 years glaze paints had been used in the western part of New Mexico and northeastern Arizona, but almost incidentally, before the glaze painted wares of the Rio Grande Valley appeared. Early Glaze A time was a period of experimentation with various types of paint. Carbon or organic paint and white matte paints along with glaze paint were used to decorate the polymorphic Los Padillas Glaze-polychromes and the Agua Fria-like redwares of the early 1300's. Centuries later, during the decline of the glaze wares in the 17th Century, after the advent of the Spanish, glaze potters throughout the upper Middle Rio Grande turned to the use of carbon and matte mineral paints with apparent equal ease and on occasion using all three types of paint on the same vessel. If one potter were familiar with several different types of paint, the exclusive selection of one of these types, such as glaze paint, was probably due to (1) the availability of source materials, and (2) its suitability for use with available clays.

The tradition of glaze paint cut across linguistic boundaries, for when the Spanish explorers arrived in the Rio Grande Valley in the mid-1500's, all Rio Grande linguistic groups were producing glaze paint wares. The carbon paint tradition of the Galisteo Black-on-White pottery had disappeared from the area, and may very well have been replaced by the Glaze-on-Yellow tradition.

On the other hand, carbon paint was used continuously in the Upper Rio Grande for many hundreds of years. During part of that time glaze paint pottery was produced in the midst of the traditional carbon paint country. One can only guess that among Southwestern Indian potters, the type of paints used can at times be culturally determined and at other times influenced by the source materials available. Perhaps each archeological situation must be studied individually and broad generalizations avoided.

What of surface colors, if temper and paint are not always reliable trace elements? There is some indication that color choice may be culturally determined. As local temper types were identified at the various pueblos being studied, color preferences for vessel surfaces became apparent. Red surfaced pottery was in favor at Zia, at the Southern Pajaritan villages of Tuyoni and Kuapa, and, farther south, at Pottery Mound and Abo. White or cream-colored slips predominated in most of the Galisteo villages and at Pecos except on Glaze IV vessels. Buff, pink and orange surfaces were characteristic of the Tonque glazes, and of the Glaze E vessels at San Lazaro (LA 91) and in the Cochiti area. Glaze F pottery from a small and briefly occupied 17th Century site near Cochiti (LA 6178) is exclusively red-surfaced and includes intrusive ware from the Galisteo area (San Marcos Pueblo), and locally made pottery, which has scoria temper. No comparable situation is known to exist at any other pueblo of the Glaze F period, the inference being that the color preference for red may have been a family affair.

The possible cultural significance of surface color was not anticipated at the beginning of the glaze paint study, so that data concerning color preferences are incomplete.

It might be added, however, that Glaze A red vessels, including Agua Fria G/R and San Clemente G-P, were evidently produced by one group of potters, while the Glaze A yellow types were made by other potters in other villages. The only exception seems to be in some of the Cochiti and Southern Pajarito villages, where all types seem to have been made at the same villages, but not necessarily by the same potters.

The clay sources available in an area may have affected the use of clay slips, for slips were not used when body clays produced the desired surface color. However, red slips were used with light cream or buff-burning clay bodies, while white or cream slips were used with red-burning clay bodies, according to the surface color desired by the potter. The need for a slip may be an environmental influence, while color selection may be culturally motivated.

Archeologists and historians have often assumed that the prehistoric Indian, though thoroughly familiar with his land and its resources, was primarily a gatherer, picking up from the surface those things he needed in his daily life and leaving no lasting mark behind him. Recent discoveries suggest that prehistoric mineral industries may have been just as highly specialized as the ceramic industry. The location of scores of prehistoric lead mines, two of which are now being excavated, should banish for all time the myth that the Indian was not capable of under-ground mining. One of the excavated mines has been opened up to a depth of 20 feet, with no bottom in sight, gives us some hint of the importance to the Pueblo Indian of lead ore for producing glazes. All work was done with primitive tools and must have taken many thousands of man hours. Pottery found in and near the lead mines indicates that the miners were mainly from San Marcos Pueblo, but future studies may show that other mines were worked by other pueblos or tribes.

There are many questions to be answered yet concerning these prehistoric mines. Did one pueblo "own" the mines and trade the raw minerals to other pueblos? What effect might such a monopoly have upon the growth or decline of ceramic centers? Who were the miners and how much of their time was spent in removing ore from the ground? What tools and mining methods were used? Were these the mines that the early Spanish explorers "discovered"? What effect did the arrival of the Spanish have upon the production of glaze pottery in the Rio Grande Valley? When were the lead deposits first found by the Indians and what effect did this have upon the development of the Rio Grande glazes? Was the lead ore also used for unfired pigment and paints as in other sections of the country?

Archeological studies of the environment in cultural context in the Southwest have just begun to produce significant results. With the application of scientific disciplines to archeological and environmental materials, gaps in the prehistoric records of early people can be filled in. The archeologist and historian need not confine themselves to "a sterile record of limited worth" (Matson 1954:202).

CULTURAL RELATIONSHIPS AND POPULATION SHIFTS

Is it possible to trace the migrations of a people in time and space through pottery and temper studies? For decades archeologists and others have been playing musical "potsherds," trying to match pottery and migrations with the different languages spoken today by the Pueblo Indians (Ford, Schroeder and Peckham 1972). Before pottery can tell us something about the people who made it, we must first determine that they did in fact make it. If these people did not make the pottery but only used it, we must know that also and understand how and why they obtained the pottery. When Shepard examined sherds from a stratigraphic test at Pueblo Bonito and found that over 40 percent of all utility and 60 percent of carbon painted ware contained rock found in the Chuska Mountains 50 miles to the west (Judd 1954:182-3, 235), our illusion that Chaco was a center of pottery manufacture was shattered. We began to wonder just where the rest of the pottery at Chaco, including the mineral painted wares, may have come from. When we begin to talk about "Chaco" pottery and to speculate about the migrations of the Chacoans to here and there, whom are we talking about?

Certainly before pottery can be related to a language, it must first be shown that both belong to the same culture or people. Before ceramic sequences can be set up and pottery types named and described, before cultural affinities can be determined, the geographic origins of pottery must be established. Scarcely a dent has yet been made in this formidable task, although the analytical methods to do so have been known for nearly 40 years. Since Kidder wrote in 1936 that the Pecos investigation had demonstrated that it is most essential for technological research to go hand in hand with excavations, few have heeded his words. But even as afterthoughts, as in the Pecos and Cochiti studies, analytical methods can produce information about the culture and history of a people that can be obtained in no other way. Fortunately, recent refinements of techniques and guidelines make such analyses far more economical than conventional methods of pottery classification.

The expectation at the beginning of the study of the Cochiti area pottery, that a continuous history of the Cochiti people could be traced through the orderly development of ceramics down through the centuries, simply did not materialize. There were unexplained changes in the tempering materials from one period to another. Pottery making virtually ceased after Glaze A time. Population decreased at Pueblo del Encierro (LA 70) and the Herrera site (LA 6455), while other sites such as Taskatse (LA 249) and Ojito del Canoncito (LA 9154) were abandoned. New temper types appeared before the end of the Glaze A period, during the Glaze C period, and again in Glaze E time. Glaze A Yellow pottery with scoria temper was made in the Cochiti area, but it is not clear if this was produced by newcomers or by the resident potters who had been making Glaze A Red. Legend has linked Cochiti Pueblo to the Pajarito Plateau but here the situation is even more confusing. Temper materials on the Plateau included fine grained basalt, basalt scoria, andesitic and rhyolitic ash flow tuffs, andesite vitrophyre, and crystal pumice. Some of the Pajarito sites had redware traditions, while others apparently produced white or yellow slopped glaze pottery.

The study raised many new questions. Why was the Cochiti area practically abandoned in the mid-1400's? Where did the people go? Were they the same people who moved back to Cochiti Pueblo in the 1600's? Who were the people who lived at Pueblo del Encierro and the Herrera site in the early 1500's and obtained most of their pottery from Tonque Pueblo? Most of these questions cannot be answered by confining the archeological

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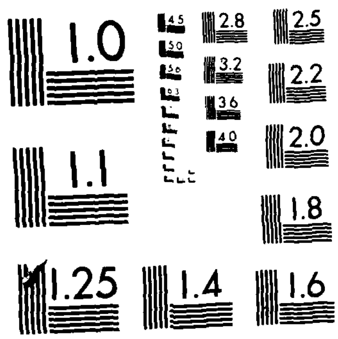


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963 A

investigations to the Cochiti area. Our nice neat vision of a stable society with continuous occupation in the Cochiti area from A. D. 1300 to present is gone. Instead we have a picture of comings and goings; houses abandoned and re-occupied at later times; of pottery making and busy trade with neighboring villages; and now and then a "no man's land."

During the time that Glaze A pottery was made, similar temper distribution patterns throughout the Cochiti area suggest that these people were friendly with one another, perhaps exchanging notes on pottery-making as well as pots, and were probably communicating in the same language. The potters of these villages may have been conservative in their styles and technology during this period, but they were practical and used local materials for temper. Selection of materials seem to have been influenced by geologic occurrence, as much as by ceramic tradition in the beginning. The higher percentages of basalt scoria occur at sites on either side of the Rio Grande where the basaltic rocks of Cerros del Rio are found. On the west side of the river, potters also made use of the volcanic rocks of the Jemez Mountains. At one site a volcanic sandstone was used; at others welded rhyolite or andesite tuffs were favored.

Once a temper material was settled upon, it then became a tradition in its respective village and continued in use throughout the occupation of the village. Potters in the Zia area have been using diabase (basalt) for temper for centuries, even though other ceramic traditions involving form, design, and paints have changed continuously. Other temper types that saw continuous use for long periods of time are sandstone at Pecos, augite latite at San Marcos; hornblende latite at Tonque, and hornblende syenite (?) at Abo. Evidence that potters generally took their temper traditions with them from one area to another is lacking. Caution should be exercised in attempting to trace population shifts by this method.

The use of basalt scoria temper in the Cochiti area was not long-lived, and had disappeared there by Glaze C time. Potters at the Pajaritan pueblo of Tyuonyi (LA 82) and Rainbow House (LA 217) continued to use it, probably into the 16th Century, when rhyolite tuff replaced it in favor. When pottery was again made at Cochiti, the rhyolite tuff was used almost exclusively during Glaze E and F times.

If temper traditions cannot be relied upon to trace population movements within a group producing the same ware, such as Glaze A Red, what evidence might be used? In temper studies, deviations from the regional temper distribution pattern combined with other lines of archeological evidence including specialized local features of a ware may point the way. For instance, at San Lazaro (LA 91), a late glaze site in the Galisteo Basin, a high percentage of Glaze D and E sherds from Tonque Pueblo are present. Locally made Glaze E pottery have rim forms and designs, as well as pink, buff and orange slips typical of the Tonque wares. Since the site was settled about the time that Tonque Pueblo was losing population, the archeologist is alerted to the possibility of a movement of people from Tonque to San Lazaro.

A similar instance is noted in the east bank site at San Felipe (LA 3137), which had a marked increase in population in middle Glaze E time, about the time that Tonque, a few miles up the Tonque Arroyo, was being abandoned. Here, however, both the clay and temper of the Tonque potters continued to be used in making Glaze F pottery long after Tonque had been abandoned. Other clays were also used, and temper materials could have been obtained from the channel of the Tonque Arroyo at San Felipe. These observations were made on the basis of surface sherds only, but they do suggest possible lines of investigation for the future.

From studies of the upper Middle Rio Grande pottery it appears that many villages produced little or no pottery. In these cases, the use of potsherds to track down migrations would not be possible. To complicate matters, there is a probability that in prehistoric as in historic time different linguistic groups lived together in one village. We still do not know whether the historic occupants of San Marcos were Keresan or Tanoan, or both, in spite of written records (Reed 1943). If two or more groups lived together at a village, which group made what pottery? Chapman (1970) has discussed the effects upon pottery making at Cochiti, when two San Ildefonso potters, Martino and Florentina Montoya, made their home there in the early 1900's. The Montoyas used Cochiti slips and clays to produce pottery with San Ildefonso forms and designs; about this time, Cochiti slips also began to be used by potters at San Ildefonso Pueblo.

PROCEDURES AND GUIDELINES

Since Anna Shepard began her work with the Pecos pottery in the early 1930's, many new instrumental methods have been developed, but for the purpose of identifying the components of tempering materials, optical methods using a petrographic microscope have not been replaced. As Shepard pointed out, initial examination with a stereomicroscope makes the procedure more efficient and economical (Shepard 1954:32).

Current studies of the Cochiti pottery have shown that the analyst does not need to study thousands of potsherds from one site in order to establish ceramic relationships with other archeological sites in a region. Often as few as 100 sherds will provide the same information as 10,000 sherds in respect to problems concerning manufacturing centers and distribution patterns. The notion that petrographic analysis is too expensive and time consuming is certainly no longer true.

The traditional methods of handling ceramic assemblages by typing pottery according to field classifications are limited in usefulness. Dating and cross-dating of sites is perhaps the most common information obtained through pottery typing. Trade ware, particularly exotic types, may be identified. Obvious centers of manufacture and cultural relationships may be inferred, the diffusion of ceramic traits may be traced, and local pottery sequences may be established. Although many of the interpretations based upon field classifications of pottery have been found to be erroneous, traditional studies can be very useful if their limitations are taken into account.

A site can be quickly located in time, often by merely "eyeballing" a few sherds collected from the surface. On a regional basis, chronological placement of sites in this manner can provide a great deal in information concerning settlement patterns and land use through time, and, just as important, can point the way to more intensive or specific archeological study. In-depth studies of ceramics, however, whether they involve design elements, internal social relationships, demographic studies, neutron activation analyses, or whatever, should go hand in hand with petrographic studies.

Areas of Archeological Research

Some of the areas to which data obtained during petrographic analysis may be applied include:

1. determination of centers of manufacture and trade;
2. extent, direction and period of trade;
3. influence of environment upon pottery manufacture and evolution, or effect upon the environment by prehistoric use of mineral resources; identification of mineral industries and trade;
4. recognizing and tracing population shifts;
5. cultural relationships among groups or villages;
6. internal social structures;
7. morphogenic and technological evolution of pottery; design studies;
8. origin and diffusion of ceramic traits;
9. refinement of chronologies within a ceramic sequence, a type, or among sites;
10. refinements of classifications and the establishment of local sequences;
11. accurate identification of established types;
12. identification of archeological problems not suspected from other lines of evidence, and
13. formulation of working hypotheses.

Although temper studies can provide a vast body of information not obtainable through a standard classification system, they in no way replace the latter. On the contrary, temper analyses make pottery classifications more meaningful and useful than ever before.

The temper studies of the upper Middle Rio Grande glazes were greatly simplified by the fact that a sound classification system existed. Mera (1933) based the glaze series upon a broad regional study of pottery using chronological and technological criteria. Mera's classifications were used throughout the course of the study of the glazes (Table I.1). Initial separation was made by pottery type. As general temper categories were established, the sherds could be separated by temper type within each pottery type.

Although excavation materials were available for study from the six Cochiti sites, it was necessary to make surface collections from many other sites in the upper Rio Grande Valley to supplement site collections on file at the Museum of New Mexico. An effort was made to examine between 500 to 1,000 rim sherds from each site, although in some cases the numbers fell short. Wherever possible, geologic specimens from the sites and rock outcrops in the vicinity were collected in an effort to locate temper sources. Preliminary analyses of the sherds from a site helped locate geologic sources in some cases, but in many instances several visits to an area were necessary to find the rock outcrops.

All sherd specimens were first examined with a stereomicroscope and grouped by the apparent rock material used for temper. Representative samples of each group were examined with a polarizing microscope using optical methods. Rock samples which appeared to mineralogically similar to the temper types were also examined petrographically. Oil immersion was used throughout and was found to be more economical in time and accurate in identification of the mineral components than thin sections. Permanent slides of crushed fragments were made for the records.

Although the majority of the Rio Grande glazes contained crushed rock temper exclusively, pottery with crushed sherd temper generally contained small amounts of distinguishable rocks or minerals, or had other physical characteristics which enabled them to be classified by temper types.

Once a temper category was determined petrographically, the sherds from a site were classified by pottery type, then by temper type. Percentages of the temper categories within each glaze types were obtained from each site.

Graphing of the percentages proved useful in different ways. Sudden or unusual changes may indicate a prehistoric event at a site. The graphs of the tempering materials in glazes from Pueblos del Encierro (LA 70) at Cochiti and San Marcos Pueblo (LA 98) in the Galisteo Basin, two sites about 20 miles apart, are shown in Fig. I.2. The three peaks at the Cochiti site suggest that there may have been three components, or possibly three periods of building and occupation, while the constant high percentage of San Marcos latite at the Galisteo pueblo suggests that a ceramic center may have existed there throughout its occupation. Changes in temper percentages from one time group to another may indicate a period of abandonment, a population influx or decrease, or even cultural and ceramic developments in neighboring areas.

Plotting of percentages within glaze types or groups at each site on maps can give graphic representations of manufacturing and trade centers and distribution of pottery in chronological sequence (see Table I.4).

Guidelines for Interpretation of Data

As information accumulated during the study of the glazes, various patterns developed, and from these, observations were made which may serve as guidelines for future interpretation of ceramic data. These are listed below for consideration or use.

1. Determination of local manufacture.

The predominant temper types at a site may indicate local manufacture of pottery if (a) it occurs at this site only; (b) if source materials are available nearby, or if rock specimens are found on the site; (c) if the same temper is used throughout the period of occupation; (d) if the percentage of tradeware is relatively low, but consistent with general distribution patterns for the area; (e) if the ware is found at other sites in decreasing amounts with increased distance away from the site, or (f) if other archeological evidence indicates pottery manufacture.

A minor temper type at a site may be local if (a) no other village was using the materials, and (b) source materials are available nearby. Gran Quivira may be an example of this situation, as only five percent of the

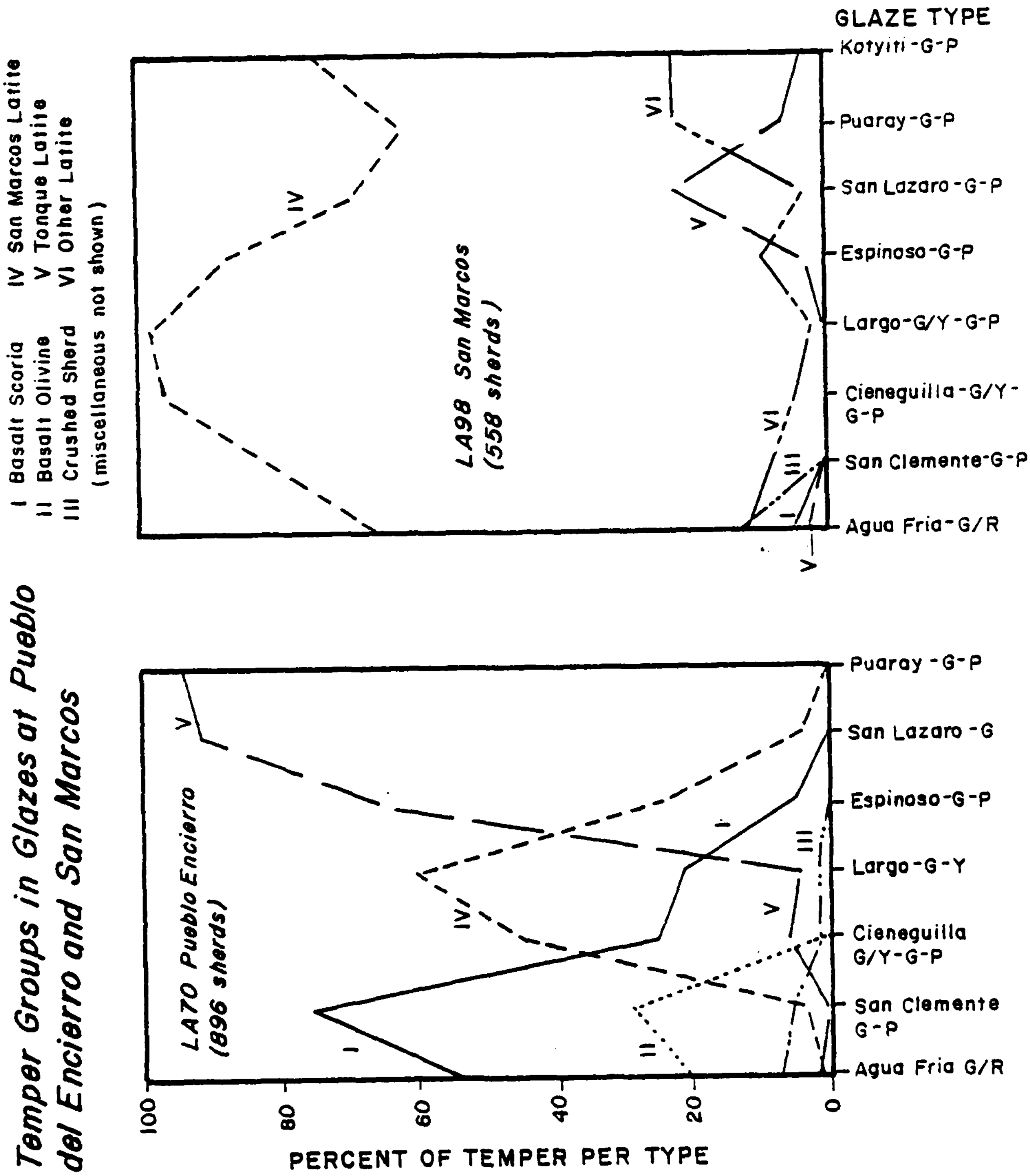


FIG. I.2 Temper Groups in Glazes at Pueblo del Encierro and San Marcos

TABLE I.4

PERCENTAGES OF TEMPER TYPES IN AGUA FRIA G/R FROM RIO GRANDE SITES

TEMPER TYPE	LA 70	LA 249	LA 9154	LA 5137	LA 7	LA 126	LA 6455	LA 35	LA 3444
Scoria, basalt	53	46	39	68	23	30	34	24	39
Basalt, olivine	20	23	27	16	14	30	17	28	22
Basalt, misc.						4			2
Sherd, crushed	7	7	17	3	32	22	17	19	3
Latite (San Marcos)	1		1	1	2		1		1
Latite (Gipuy, LA 182)	9	10	7		15	2	4	4	3
Latite (Tonque)	1	1		1	3		1	7	1
Latite, hornblende		3	2		2				
Rhyolite tuff	1	2	2		3		4	12	2
Pumice, crystal				1			3		
Andesite vitrophyre	1	2				6		2	7
Andesite tuffs misc. (Pajarito)	5	3		10	2	4	5	8	8
Vitric tuff								1	
Sandstone, volcanic	1				1	2	10		6
Other	1	3	5		3		1	2	1

glazes contained a local rock which was used in black-on-white wares, while the bulk of the glazes were intrusive from known manufacturing centers in neighboring villages.

Local source materials were generally, but not always, used in pottery making. Slip clays or pigments were more likely to have been imported than tempering materials and body clays.

Potters were relatively consistent in the use of materials, particularly temper. Vessels from areas or sites that are known to have been occupied continuously for a long period of time usually contain one temper material, as in the Zia or Pecos villages. The same temper type may be used in utility ware as in the decorated, but just as often different types were used. Occasionally both types of temper may occur in one vessel, indicating that a potter making both decorated and utility wares used materials preferentially.

2. Recognition of tradewares at a site.

Pottery at a site may be tradeware if (a) the percentage of temper type is relatively small; (b) if percentages of the suspected intrusives are consistent with known distribution patterns for the ware, and if the pottery is known to have been manufactured elsewhere; (c) if it occurs in larger quantities at other sites; (d) if source materials cannot be found locally either at the site or in outcrops, or (e) if a wide variety of temper types occur at the site but none predominate.

Decorated wares were more likely to have been trade items than utility wares, but many exceptions to this rule occur. Future studies of culinary vessels may prove that these are as useful in cultural interpretations as decorated wares. The type of vessel carried or traded to another site may be useful to indicate the function of that site.

Pottery manufacutre and trade were highly specialized in the southwest during prehistoric and historic time and were an integral part of the Indian economy. Production for trade was usually confined to a small number of glaze paint villages and it appears that many villages may have produced little or no pottery locally.

3. Origin and diffusion of ceramic traits.

Potters are known to be a conservative group; methods of manufacture and other ceramic traits have often persisted down through the centuries. Yet pottery traditions do change, and the means by which these changes occur have always been of interest to the prehistorian. Methods of manufacture seem to be less subject to change than designs, which seem to cross the boundaries of various wares. The color traditions for slips or vessel surfaces may be more consistent than the type of paint used for decorations. The use of a slip may be a function of the environment, for if the clay produces the desired surface color, a slip is not necessary. The type of paint used may have been determined by the pigments or body clays available and a potter may have been skilled

in use of all pigment types. In general, ceramic change is slow, but accelerates as a result of population movements or social change.

The origin of most ceramic traits are lost in time and will no doubt remain so. Perhaps some answers will be found through environmental studies, which pinpoint source materials, their utilization and properties; and others through the experimentation of modern day potters with primitive methods and source materials.

Diffusion of traits may have occurred in many ways. There is the possibility that apprenticeships may have played a role prehistorically. Migrations and marriages were means of transporting traditions from one area to another. Direct copying of design or form from trade vessels would be possible for a skilled potter, although manufacturing techniques would generally have to be transmitted on a person to person basis. Undoubtedly, some diffusion occurred in the past when potters were welcomed at a village that perhaps did not have skilled potters in residence.

4. Chronological refinements.

Each ceramic center had its own pottery sequence and should have a comparable chronological sequence. A long-lived pottery type may become useful as a stratigraphic marker if changes in temper usage can be related to the chronology. Minor changes in form or design can also be useful.

5. Population movements.

If the earliest pottery type produced is a copy of an intrusive ware, generally not traded, it may be possible to trace new settlers back to their former home. If sudden changes in production methods appear in the middle of an occupation, a new group may have arrived. The newcomers may begin to use local source materials, but will continue to produce pottery in their former traditions, at least for a while. Abrupt changes in the use of tempering material at a site indicate a population influx, or it might mean a break in the occupation of the site.

SUMMARY AND REMARKS

The foregoing discussion presents some of the findings of additional, but still incomplete, studies of the Rio Grande glazes, a research plan which was initiated in the 1930's by Anna O. Shepard and A. V. Kidder, at Pecos Pueblo (1936). Observations concerning manufacturing practices and economic considerations of prehistoric ceramics in the Middle Rio Grande have been made, and guidelines and hypotheses for future studies have been made. New methods or techniques for applying petrographic analyses to the study of archeological materials were used and are described in this report. It must be kept in mind, however, that every archeological problem is unique and will require adjustments to any existing methods, or perhaps the improvisation of its own special research plan. More than anything else, the results of the more recent studies of the Rio Grande glazes in the Cochiti district emphasize the need for use of multiple or varied classification systems within any research project.

Appendices II-IX
Lithic Artifact Class Summaries

INTRODUCTION TO LITHIC APPENDICES

Summaries of some of the variability monitored for lithic artifacts recovered from sites in the permanent pool of Cochiti Reservoir are presented in the following appendices. A brief discussion of the format for each appendix is presented below.

PROVENIENCE GROUP LISTING

The first two appendices are summarized by Provenience Group Number. The following list specifies the analytical assemblage units for the proveniences listed in the appendices.

Site No.	Prov. Group No.	Analytical Unit
LA 9138	1	Room 6, level 1
	2	Grid E6, level 0
	3	Room 7, levels 1-10
	4	Room 7, level 11
	5	Burial
	6	Grid B5, level 0
	7	Room 1, level 1
	8	Room 1, level 2
	9	Room 1, levels 3,4
	10	Room 2, level 1
	11	Room 2, level 2
	12	Grids, Provenience 1
	13	Room 3, level 1
	14	Room 3, level 2
	15	Room 3, levels 3,4
	16	Room 4, level 1
	17	Room 4, level 2
	18	Room 4, levels 3,4
	19	Grids, Provenience 2
	20	Room 5, level 0
	21	Room 5, level 1
	22	Grid E2, level 1
	23	Room 8, level 1
	24	Room 8, level 2
	25	Room 9, level 1
	26	Occupation surface, Provenience 4
	27	Grids, Provenience 4
LA 10110	1	Provenience 1, levels 0,1
LA 10111	no artifacts were recovered	
LA 12161	1	Room 1, levels 1,2
	2	Room 1, level 3
	3	Room 1, level 4
	4	Trash midden, all levels
	5	Grids, levels 0,1
LA 12438	1	all tested areas
LA 12442	1-2	see site report
LA 12443	1	Room 1, levels 0-2
	2	Grids, levels 0,1
LA 12444	1-7	see site report
LA 12447	1	Feature 1
	2	Feature 2
	3	Grids, level 0
LA 12448	1-3	see site report
LA 12449	1	Room 1, levels 0,1
	2	Test outside Room 1
	3	Trash midden
LA 12454	1	Room 1, levels 1-3

Site No.	Prov. Group No.	Analytical Units
LA 12454 (con't)	2	Room 1, level 4
	3	Room 2, levels 1,2
	4	Room 2, level 3
	5	Grids, level 1
LA 12456	1-8	see site report
LA 12463	1-4	see site report
LA 12465	1	Room 4, level 1
	2	Exterior test
	3	Surface collection
LA 12468	1-2	see site report
LA 12483	1-3	see site report
LA 12486	1-5	see site report
LA 12494	1-8	see site report
LA 12495	1-2	see site report
LA 12496	1-21	see site report
LA 12507	1	Room 1, level 1
	2	Exterior trench
LA 12515	no artifacts were recovered	
LA 12517	1	Room 1, level 1
LA 12518	1	Room 1, level 1
	2	Room 2, level 1
	3	Exterior tests
LA 12519	1	Room 1, level 1
	2	Room 2, level 1
	3	Exterior trenches
LA 12524	1	Room 1, level 1

APPENDIX II
DEBITAGE AND SMALL ANGULAR DEBRIS REDUCTION VARIABILITY

Data concerning attributes of debitage and small angular debris informative of the stage of reduction have been summarized by general material categories of obsidian, basalt, chert, chalcedony and other material.

The appendix is organized by site number and provenience number within sites. The reader is directed to the preceeding list which specifies for each site location the analytical units to which provenience numbers in this appendix refer.

Because of space considerations, abbreviated headings were employed in the appendix. The following Key provides full descriptive headings.

The major heading "TYPE OF DEB." refers to type of debitage. Four headings appear under "TYPE OF DEB." These include:

"# ART" = total number of debitage and small angular debris manufactured from the material
"FREE" = freehand debitage
"BIP" = debitage produced through bipolar manufacture
"SAD" = small angular debris

The major heading "PLATFORM TYPE" is self explanatory. Five minor headings appear under "PLATFORM TYPE". These include:

"CTX" = cortical platform
"FACET" = noncortical, single facet platform
"RET" = retouch platform

"RESH" = resharpening platform
"TOTAL" = total number of debitage exhibiting platforms

The major heading "CORTEX TYPE" is self explanatory. Three minor headings appear under "CORTEX TYPE". These include:

"WW" = waterworn cortex
"OT" = other, or nonwaterworn cortex
"TOTAL" = total number of artifacts exhibiting cortical surfaces

The major heading "CORTEX PLACEMENT" is self explanatory. Four minor headings appear under "CORTEX PLACEMENT". These include:

"PLT" = platform only
"DRS" = dorsal surface only
"P+D" = platform *and* dorsal surface
"SAD" = small angular debris exhibiting cortex

APPENDIX III
DEBITAGE AND SMALL ANGULAR DEBRIS UTILIZATION VARIABILITY

Data concerning attributes of debitage and small angular debris informative of their utilization as tools have been summarized by general material taxons of obsidian, basalt, chert, chalcedony and other materials.

The appendix is organized by site number and provenience number within sites. The reader is directed to the introductory list which specifies the analytical assemblage units to which provenience numbers in the appendix refer.

Because of space considerations, abbreviated headings have been employed in the appendix. The following key provides full descriptive headings.

The first minor heading, "# AR" refers to the total number of artifacts exhibiting utilized edges for each general material category.

The second minor heading, "# ED" refers to the total number of utilized edges exhibited by those artifacts.

The major heading "RETOUCH" refers to the kind of retouching exhibited by utilized edges. Three minor headings appear under "RETOUCH". These include:

"UNR" = unretouched
"UND" = unidirectionally retouched
"BID" = bidirectionally retouched

The major heading "OUTLINE" refers to the overall outline shape of utilized edges. Five minor headings appear under "OUTLINE". These include:

"CNC" = concave
"STR" = straight
"CNV" = convex
"C-C" = concave-convex
"PRJ" = projection

The major heading "SINSTY" refers to the sinuosity of utilized edges. Two major headings appear under "SINSTY". These include:

"LAT" = lateral sinuosity
"TRN" = transverse sinuosity

The remaining major and minor headings all refer to wear pattern attributes exhibited by utilized edges.

The major heading "PLCMNT" refers to placement of microscars with respect to the edge perimeter. Two minor headings appear under "PLCMNT". These include:

"UND" = unidirectional placement
"BID" = bidirectional placement

The major heading "SCAR TYPE" is self explanatory. Five minor headings appear under "SCAR TYPE". These include:

"D.F" = feathered scars oriented at a diagonal to the edge margin
"P.S" = step fractures oriented perpendicular to the edge margin
"D.S" = step fractures oriented at a diagonal to the edge margin
"CRS" = crescentic scars
"NBL" = nibbling scars

The major heading "EDGE ROUNDING" refers to edge cross section shape produced through abrasion. Four minor headings appear under "EDGE ROUNDING". These include:

"BRD" = an evenly, bidirectionally rounded edge
"URD" = a unidirectionally rounded edge
"BVL" = a beveled edge
"FLT" = an edge flat in cross-section

The major heading "OTHER WEAR" is self explanatory. Three minor headings appear under "OTHER WEAR". These include:

"ROT" = wear patterns indicative of rotary or drill like usage
"POL" = polish
"STR" = striations

The major heading "BCK" refers to the presence of backing opposite utilized edges.

The major heading "MEAN " refers to the mean edge angle in degrees exhibited by all utilized edges of a given material category.

The major heading "S.D. " refers to the standard deviation exhibited by the population of edge angles for given material categories.

APPENDIX IV
LARGE ANGULAR DEBRIS AND CHOPPERS

This appendix is organized by artifact within general material categories by site location. Specific material taxons are entered as four digit codes, maximum and minimum dimensions are entered as millimeters, and weight is entered as grams. For those pieces of large angular debris exhibiting evidence of utilization (or "choppers") edge angle measurements are provided for utilized edges created through fracture, and morphological information is provided for other surfaces of the artifact exhibiting battering.

The headings and entries are otherwise largely self explanatory.

APPENDIX V
CORES

The core appendix is organized by artifact within site locations. Material variability is entered as four digit material taxon codes. Maximum and minimum dimensions of artifacts and of platforms are entered as millimeters. Weight of cores is entered as grams.

"PLAT ANGLE" (platform angle) refers to the angle between the striking platform and the negative scar of debitage removed from that platform. This angle was measured separately for each scar 2.0cm or greater in length detached from a given platform. Utilization is documented as the presence or absence of battering or nonbattering wear.

The headings and entries on the appendix are otherwise self explanatory.

APPENDIX VI
HAMMERSTONES

The hammerstone appendix is organized by artifact within site locations. Material variability is entered as four digit taxon codes. Maximum and minimum dimensions are entered as millimeters, and weight is entered as grams. The appendix headings and entries are otherwise self explanatory.

APPENDIX VII
MANOS

The mano appendix is organized by artifact within site locations. With the following exceptions, the headings and entries are largely self explanatory.

Material variability is entered as four digit material taxon codes. Under the heading "X-SECTION" (cross section), the entry "R. TRIANG" refers to right triangle, and the entry "I. TRIANG" refers to isoceles triangle. All dimensions are in centimeters.

APPENDIX VIII
METATES AND INDETERMINATE GROUND STONE

The metate appendix is organized by artifact within site locations. Material variability is entered as four digit material taxon codes, and all dimensions are in centimeters. The remaining headings and entries are largely self explanatory.

APPENDIX IX
FACIALLY RETOUCHED ARTIFACTS

This appendix documents attribute variability recorded for unifacially and bifacially manufactured artifacts. The appendix is organized by site number, and by artifact within sites, rather than by provenience locale. The appendix headings and descriptive entries are largely self explanatory, and only those headings or entries which might be confusing will be discussed.

Missing entries under the heading "SHAPE" mean that the overall outline shape of the artifact could not be determined.

Missing entries under the headings "NOTCHES", "STEM", or "BASE" mean that no such attributes were exhibited by the artifact. The entry "INDETERMINATE" under those headings means that the artifact exhibited evidence of the attribute (such as a notch or stem) but that further description of the attribute kind or placement could not be ascertained.

Entries under the headings "LGTH" (length) and "WDTH" (width) are in centimeters; entries under the heading "THICK" (thickness) are in millimeters.

SITE NUMBER: 5138 PROVENIENCE NUMBER: 1

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	18	14	0	4	1	6	0	0	7	10	0	10	1	6	0	3
CHERT	23	18	1	4	8	2	0	0	10	13	2	15	6	6	2	1
CHALCEDONY	13	13	0	0	5	0	0	0	5	6	0	6	5	1	0	0
OTHER	2	2	0	0	1	1	0	0	2	2	0	2	1	1	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 2

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	2	2	0	0	0	2	0	0	2	1	0	1	0	1	0	0
CHERT	2	1	0	1	1	0	0	0	1	2	0	2	1	0	0	1
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 3

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	17	14	0	3	1	5	0	0	6	4	1	5	0	3	1	1
CHERT	8	5	1	2	1	2	0	0	3	4	0	4	1	1	0	2
CHALCEDONY	3	3	0	0	0	2	0	0	2	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 4

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	224	182	1	41	10	69	0	0	79	103	8	111	4	90	6	11
CHERT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	81	50	5	26	2	6	0	0	8	19	3	22	1	13	1	7
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 5

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 6

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 7

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	10	9	0	1	3	3	0	0	6	4	1	5	3	2	0	0
OTHER	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 8

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	1	0	0	1	0	0	0	1	0	1	1	1	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 9

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	5	5	0	0	1	0	0	0	1	0	5	5	1	4	0	0
BASALT	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0
CHERT	11	8	0	3	2	2	0	0	4	1	2	3	1	1	1	0
CHALCEDONY	16	14	0	2	6	1	0	0	7	8	3	11	6	4	0	1
OTHER	1	1	0	0	0	1	0	0	1	0	1	1	0	1	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 10

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 12

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	3	3	0	0	0	0	0	0	0	0	1	1	0	1	0	0
CHERT	1	1	0	0	0	1	0	0	1	0	2	2	0	2	0	0
CHALCEDONY	16	11	2	3	2	2	0	0	4	5	1	6	1	3	1	1
OTHER	2	1	1	0	1	0	0	0	1	1	1	2	0	1	1	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 13

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	4	2	1	1	1	0	0	0	1	2	0	2	0	0	1	1
CHERT	4	4	0	0	1	0	0	0	1	3	0	3	1	2	0	0
CHALCEDONY	9	7	2	0	2	0	0	0	2	3	1	4	0	2	2	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 14

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	11	9	0	2	0	1	0	0	1	4	3	7	0	6	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5139 PROVENIENCE NUMBER: 15

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	2	2	0	0	0	1	0	0	1	1	0	1	0	1	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	2	2	0	0	0	0	0	0	0	2	0	2	0	2	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 16

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	7	6	1	0	0	1	0	0	1	3	1	4	0	4	0	0
CHERT	3	2	0	1	1	0	0	0	1	1	0	1	1	0	0	0
CHALCEDONY	11	6	0	5	2	0	0	0	2	4	2	6	0	1	2	3
OTHER	3	3	0	0	1	0	0	0	1	1	0	1	1	0	0	0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 17

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	1	0	0	0	1	0	0	1	1	0	1	0	1	0	0
CHALCEDONY	3	3	0	0	0	1	0	0	1	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 18

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHERT	8	6	1	1	1	2	0	0	3	2	1	3	1	2	0	0
CHALCEDONY	13	12	0	1	2	4	0	0	6	8	1	9	1	6	1	1
OTHER	2	1	0	1	0	0	0	0	0	1	1	2	0	1	0	1

SITE NUMBER: 5138 PROVENIENCE NUMBER: 19

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	3	3	0	0	1	1	0	0	2	1	0	1	1	0	0	0
CHALCEDONY	4	3	0	1	0	1	0	0	1	2	0	2	0	2	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 20

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5139 PROVENIENCE NUMBER: 21

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0
CHALCEDONY	2	2	0	0	1	1	0	0	2	1	0	1	1	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 22

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	1	0	2	1	0	0	0	1	2	0	2	0	0	1	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 23

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+C	SAD
OBSIDIAN	4	3	1	0	1	0	0	0	1	0	1	1	1	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	8	5	1	2	2	2	0	0	4	2	1	3	1	1	1	0
CHALCEDONY	19	15	1	2	5	3	0	1	9	10	0	10	4	5	1	0
OTHER	2	1	0	1	0	0	0	0	0	2	0	2	0	1	0	1

SITE NUMBER: 5138 PROVENIENCE NUMBER: 24

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	1	1	0	0	1	0	0	0	1	0	1	1	1	0	0	0
BASALT	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	21	18	0	3	2	6	0	0	8	14	0	14	1	11	1	1
CHALCEDONY	12	10	0	2	3	1	0	0	4	8	0	8	2	3	1	2
OTHER	2	1	0	1	1	0	0	0	1	2	0	2	0	0	1	1

SITE NUMBER: 5138 PROVENIENCE NUMBER: 25

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+C	SAD
OBSIDIAN	14	13	0	1	5	1	0	0	6	9	0	9	3	3	2	1
BASALT	11	10	0	1	3	4	0	0	7	4	1	5	2	2	1	0
CHERT	14	9	0	5	1	2	0	0	3	7	0	7	0	2	1	4
CHALCEDONY	22	20	0	2	2	6	0	0	8	15	1	16	2	12	0	2
OTHER	3	3	0	0	0	1	0	0	1	1	0	1	0	1	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 26

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	2	1	0	1	0	0	0	0	0	1	0	1	0	1	0	0
CHERT	2	2	0	0	0	1	0	0	1	1	0	1	0	1	0	0
CHALCEDONY	13	10	0	3	2	4	0	0	6	4	0	4	2	2	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 5138 PROVENIENCE NUMBER: 27

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	11	8	0	3	1	4	0	0	5	3	1	4	0	2	1	1
BASALT	50	24	1	15	1	14	0	0	15	13	4	17	0	12	1	4
CHERT	31	15	0	16	1	5	0	0	6	9	1	10	0	3	1	0
CHALCEDONY	107	76	1	30	22	23	0	0	45	46	5	51	10	19	12	10
OTHER	6	4	0	2	0	2	0	0	2	1	0	1	0	1	0	0

SITE NUMBER: 10110 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0			0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0			0	0	0	0	0
CHERT	3	2	0	1	0	0	0	0	0	1	0	1	0	1	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12161 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	56	43	2	11	7	16	2	0	25	11	17	28	6	19	1	2
BASALT	32	29	0	3	0	12	0	2	14	6	1	7	0	6	0	1
CHERT	44	40	0	4	3	15	0	0	18	9	3	12	2	7	1	2
CHALCEDONY	81	73	0	8	2	34	0	5	41	13	8	21	0	15	2	4
OTHER	4	3	0	1	0	2	0	0	2	1	1	2	0	1	0	1

SITE NUMBER: 12161 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	21	19	0	2	0	3	0	0	3	5	2	7	0	5	0	2
BASALT	10	8	0	2	0	4	1	0	5	3	0	3	0	2	0	1
CHERT	18	17	0	1	1	6	0	0	7	3	1	4	1	3	0	0
CHALCEDONY	41	33	0	8	1	12	0	1	14	3	3	6	0	3	1	2
OTHER	2	2	0	0	0	1	0	0	1	1	0	1	0	1	0	0

SITE NUMBER: 12161 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WH	OT	TOTAL	CORTEX PLACEMENT PLT	CRS	F+D	SAD
OBSIDIAN	7	4	0	3	1	2	0	0	3	1	0	1	1	0	0	0
BASALT	2	2	0	0	0	0	0	0	0	1	0	1	0	1	0	0
CHERT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	7	5	0	2	0	2	0	0	2	2	0	2	0	2	0	0
OTHER	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0

SITE NUMBER: 12161 PROVENIENCE NUMBER: 4

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	163	141	4	36	11	37	1	2	51	31	13	44	8	21	3	12
BASALT	28	27	0	1	2	4	0	3	9	5	6	11	1	9	1	0
CHERT	83	64	0	16	6	16	1	0	23	17	19	36	5	20	1	10
CHALCEDONY	76	67	0	9	8	24	0	0	32	19	16	35	6	19	2	0
OTHER	23	15	0	8	2	2	0	0	4	9	4	13	2	7	0	4

SITE NUMBER: 12161 PROVENIENCE NUMBER: 5

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	155	137	2	16	3	27	3	10	43	7	18	25	2	18	1	4
BASALT	89	76	1	12	3	25	1	3	32	22	4	26	2	22	1	1
CHERT	24	21	0	3	1	6	1	2	10	6	0	6	0	2	1	3
CHALCEDONY	115	58	0	17	6	30	1	2	39	27	9	36	3	24	3	6
OTHER	18	11	0	4	1	2	0	0	3	7	0	7	1	4	0	2

SITE NUMBER: 12438 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	6	6	0	0	2	2	0	0	4	2	2	4	2	2	0	0
BASALT	8	4	0	4	2	0	0	0	2	4	1	5	1	2	1	1
CHERT	8	8	0	0	2	4	0	1	7	6	0	6	2	4	0	0
CHALCEDONY	7	5	0	2	1	3	0	0	4	5	1	6	1	3	0	2
OTHER	1	1	0	0	0	1	0	0	1	1	0	1	0	1	0	0

SITE NUMBER: 12438 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12442 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	701	626	24	51	210	51	2	4	267	43	489	532	37	286	173	37
BASALT	314	245	1	68	8	23	0	0	31	23	50	73	5	43	3	22
CHERT	36	34	0	2	5	4	0	1	10	9	1	10	4	4	1	1
CHALCEDONY	69	52	0	17	3	8	0	0	11	25	4	29	2	18	1	0
OTHER	10	6	0	4	0	3	0	0	3	2	1	3	0	0	0	1

SITE NUMBER: 12442 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	17	14	1	2	4	1	0	0	5	1	8	9	3	5	1	0
BASALT	27	24	0	3	0	3	0	0	3	0	7	7	0	6	0	1
CHERT	2	2	0	0	0	1	0	0	1	0	1	1	0	1	0	0
CHALCEDONY	20	11	0	9	1	3	0	0	4	11	1	12	0	5	1	0
OTHER	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	14	12	0	2	0	6	1	1	8	2	4	6	0	5	0	1
BASALT	29	24	0	5	1	6	0	0	7	2	4	6	1	4	0	1
CHERT	9	7	0	2	2	3	0	0	5	2	3	5	1	1	1	2
CHALCEDONY	6	6	0	0	0	3	0	0	3	0	1	1	0	1	0	0
OTHER	2	2	0	0	0	1	0	0	1	0	1	1	0	1	0	0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	18	14	1	3	1	7	0	0	8	6	5	11	0	8	1	2
BASALT	121	110	0	11	4	25	0	1	30	7	39	46	3	36	1	6
CHERT	23	19	0	4	3	1	0	0	4	3	4	7	2	4	1	0
CHALCEDONY	22	22	0	0	2	4	1	1	8	4	7	11	1	9	1	0
OTHER	4	3	0	1	0	1	0	0	1	1	0	1	0	0	0	1

SITE NUMBER: 12444 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	5	5	0	0	2	1	0	0	3	0	3	3	2	1	0	0
BASALT	167	139	0	28	6	31	0	10	47	5	38	43	4	28	2	9
CHERT	4	2	0	2	0	0	0	0	0	0	1	1	0	1	0	0
CHALCEDONY	22	13	0	9	1	2	0	0	3	3	6	9	1	3	0	5
OTHER	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
BASALT	9	7	0	2	2	2	0	0	4	1	3	4	1	1	1	1
CHERT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	2	1	0	1	0	0	0	0	0	1	0	1	0	0	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 3

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	24	19	0	5	2	3	0	0	5	0	14	14	1	9	1	3
BASALT	106	90	0	16	1	18	1	1	21	5	31	36	1	27	0	8
CHERT	7	7	0	0	0	0	0	0	0	3	0	3	0	3	0	0
CHALCEDONY	9	7	0	2	1	0	0	0	1	3	2	5	1	3	0	1
OTHER	2	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 4

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	51	40	2	9	3	9	0	1	13	2	24	26	1	18	2	5
BASALT	266	227	0	39	3	49	0	0	52	15	51	66	2	52	1	11
CHERT	24	22	0	2	0	4	0	0	4	4	0	4	0	4	0	0
CHALCEDONY	47	37	0	10	1	11	0	1	13	12	6	18	1	12	0	5
OTHER	6	6	0	0	1	1	0	0	2	2	0	2	1	1	0	0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 5

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	11	9	0	2	0	1	0	0	1	1	3	4	0	2	0	2
BASALT	77	56	0	21	0	5	0	0	5	3	10	13	0	9	0	4
CHERT	5	4	0	1	0	1	0	0	1	1	0	1	0	1	0	0
CHALCEDONY	7	6	0	1	1	1	0	0	2	3	1	4	1	2	0	1
OTHER	2	2	0	0	0	0	0	0	0	2	0	2	0	2	0	0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 6

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	35	30	0	5	4	3	0	0	7	5	14	19	2	14	2	1
BASALT	134	111	0	23	2	24	0	2	26	6	37	43	2	33	0	3
CHERT	22	21	0	1	1	3	0	0	4	3	1	4	1	3	0	0
CHALCEDONY	31	24	0	7	0	5	0	0	5	9	0	9	0	7	0	2
OTHER	10	8	0	2	0	3	0	0	3	3	0	3	0	3	0	0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 7

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	36	30	1	5	2	5	0	1	8	2	15	17	1	13	1	2
BASALT	387	327	0	60	7	87	0	14	108	15	75	90	5	67	2	16
CHERT	18	14	0	4	0	6	0	1	7	5	0	5	0	3	0	2
CHALCEDONY	31	21	0	10	2	5	0	1	8	10	6	16	0	10	2	4
OTHER	2	1	0	1	0	0	0	0	0	1	0	1	0	0	0	1

SITE NUMBER: 12447 PROVENIENCE NUMBER: 1

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	20	16	0	4	1	5	0	0	6	1	3	4	1	3	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	3	0	0	0	1	0	0	1	1	1	2	0	2	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12447 PROVENIENCE NUMBER: 2

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	4	3	0	1	1	0	0	0	1	1	1	2	0	0	1	1
CHALCEDONY	1	1	0	0	1	0	0	0	1	1	0	1	1	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12447 PROVENIENCE NUMBER: 3

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	9	6	0	3	1	3	0	0	4	2	1	3	1	1	0	1
BASALT	162	140	0	22	3	36	0	3	42	13	20	33	2	27	1	3
CHERT	10	7	0	3	0	1	0	0	1	3	1	4	0	3	0	1
CHALCEDONY	51	42	0	9	6	8	0	0	14	14	6	20	5	9	1	5
OTHER	7	6	0	1	0	0	0	0	0	3	0	3	0	3	0	0

SITE NUMBER: 12448 PROVENIENCE NUMBER: 1

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	2	2	0	0	1	1	0	0	2	1	1	2	0	1	1	0
BASALT	30	23	0	7	1	12	1	0	14	13	4	17	0	10	1	6
CHERT	1	1	0	0	1	0	0	0	1	1	0	1	0	0	1	0
CHALCEDONY	7	6	0	1	1	2	0	0	3	2	1	3	1	2	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12448 PROVENIENCE NUMBER: 2

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	DT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	3	1	0	2	0	0	0	0	0	0	1	1	0	0	0	1
BASALT	3	1	0	2	0	1	0	0	1	0	0	0	0	0	0	0
CHERT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12448 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	1	0	0	0	1	1	0	1	1	0	0	0
BASALT	[illegible]	1	0	5	0	3	0	0	3	1	0	1	0	1	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12449 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	7	7	0	0	1	4	0	0	5	0	3	3	0	2	1	0
BASALT	48	32	0	16	2	6	0	0	8	2	5	7	2	4	0	1
CHERT	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0
CHALCEDONY	12	12	0	1	1	2	0	0	3	2	2	4	0	2	1	1
OTHER	4	4	0	0	0	1	0	0	1	2	0	2	0	2	0	0

SITE NUMBER: 12449 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	2	1	0	1	1	0	0	0	1	0	1	1	1	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12449 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	4	1	1	2	0	1	0	0	1	0	1	1	0	1	0	0
BASALT	69	49	0	10	2	8	0	0	10	3	3	6	2	4	0	0
CHERT	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHALCEDONY	9	6	0	3	0	2	0	0	2	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12454 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	3	2	0	1	0	1	0	0	1	0	1	1	0	1	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12454 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	19	16	0	3	2	4	0	1	7	5	2	7	1	4	1	1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	2	1	0	1	0	0	0	0	0	1	0	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12454 PROVENIENCE NUMBER: 4

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	2	1	0	1	0	1	0	0	1	1	0	1	0	0	0	1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12454 PROVENIENCE NUMBER: 5

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	10	7	0	3	0	1	1	2	4	0	1	1	0	1	0	0
BASALT	143	57	1	45	15	32	1	2	50	18	28	46	11	19	4	12
CHERT	6	5	0	1	1	3	0	0	4	4	0	4	1	3	0	0
CHALCEDONY	9	6	0	3	0	2	0	0	2	4	0	4	0	3	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	8	6	0	2	2	0	2	0	4	2	2	4	0	2	2	0
BASALT	135	105	0	30	23	28	1	3	55	45	15	60	15	26	8	11
CHERT	4	4	0	0	0	4	0	0	4	1	1	2	0	2	0	0
CHALCEDONY	18	12	0	6	2	3	0	0	5	4	5	9	2	4	0	3
OTHER	3	3	0	0	0	2	0	0	2	2	0	2	0	2	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	8	7	0	1	1	2	2	0	5	0	1	1	1	0	0	0
BASALT	7	2	0	5	0	1	0	0	1	1	1	2	0	1	0	1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	2	0	1	0	2	0	0	2	0	1	1	0	0	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	11	[illegible]	0	2	2	1	2	1	6	4	0	4	2	2	0	0
BASALT	21	12	0	9	3	1	0	0	4	4	5	9	3	4	0	2
CHERT	2	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0
CHALCEDONY	9	5	0	4	0	3	0	0	3	0	3	3	0	2	0	1
OTHER	2	1	0	1	0	0	0	0	0	1	0	1	0	1	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 4

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	33	22	0	11	3	6	3	0	12	6	2	8	2	5	1	0
BASALT	60	43	0	17	6	17	3	1	27	15	22	37	5	25	1	6
CHERT	8	7	0	1	2	0	0	0	2	4	0	4	2	2	0	0
CHALCEDONY	54	37	0	17	4	12	1	1	18	5	15	20	4	8	0	6
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 5

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	42	29	0	13	7	7	2	2	18	12	9	21	6	5	1	0
BASALT	96	66	0	30	6	16	1	3	26	13	16	29	4	16	2	7
CHERT	6	3	0	3	1	1	0	0	2	2	1	3	1	1	0	1
CHALCEDONY	38	27	0	11	3	7	1	1	12	6	7	13	3	7	0	3
OTHER	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 6

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	1	0	0	0	1	0	1	1	0	0	1	0
BASALT	189	134	0	55	43	34	5	3	85	92	11	103	35	34	8	23
CHERT	4	3	0	1	0	2	0	1	3	1	1	2	0	1	0	1
CHALCEDONY	23	19	0	4	4	8	1	0	13	4	8	12	3	5	1	3
OTHER	2	1	0	1	0	1	0	0	1	2	0	2	0	1	0	1

SITE NUMBER: 12456 PROVENIENCE NUMBER: 7

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	5	3	0	2	0	1	1	0	2	1	1	2	0	0	0	2
BASALT	13	10	0	3	1	3	0	0	4	2	2	4	0	2	1	1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	2	0	0	2	0	0	0	0	0	0	1	1	0	0	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 8

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	6	4	0	2	0	0	2	1	3	1	1	2	0	1	0	1
BASALT	22	21	0	1	2	7	0	0	9	4	8	12	1	9	1	1
CHERT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	5	4	0	1	0	1	0	0	1	0	2	2	0	1	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12463 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	11	11	0	0	1	4	0	1	6	0	4	4	1	3	0	0
BASALT	40	37	0	3	1	9	0	0	10	7	4	11	1	10	0	0
CHERT	2	1	0	1	0	0	0	0	0	1	0	1	0	0	0	1
CHALCEDONY	9	9	0	0	0	3	0	0	3	4	1	5	0	5	0	0
OTHER	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0

SITE NUMBER: 12463 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	43	41	0	2	2	17	3	2	24	2	2	4	1	2	1	0
BASALT	68	61	0	7	4	16	0	0	20	8	10	18	3	13	1	1
CHERT	8	7	0	1	1	1	0	0	2	6	0	6	1	5	0	0
CHALCEDONY	26	22	0	4	2	11	0	0	13	8	1	9	2	6	0	2
OTHER	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0

SITE NUMBER: 12463 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	21	19	0	2	0	10	1	2	13	2	6	8	0	8	0	0
BASALT	41	37	0	4	2	11	0	0	13	8	11	19	1	17	1	0
CHERT	5	5	0	0	1	2	0	0	3	1	1	2	1	1	0	0
CHALCEDONY	15	15	0	0	1	4	0	0	5	0	2	2	1	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12463 PROVENIENCE NUMBER: 4

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	7	7	0	0	2	2	0	0	4	2	2	4	2	2	0	0
BASALT	15	13	0	2	1	5	0	0	6	4	1	5	1	3	0	1
CHERT	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	4	3	0	1	0	2	0	0	2	1	1	2	0	2	0	0
OTHER	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0

SITE NUMBER: 124[illegible] PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN			0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT			0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT			0	0	0	3	0	0	3	2	0	2	0	2	0	0
CHALCEDONY			0	0	0	1	0	0	1	2	0	2	0	2	0	0
OTHER			0	0	1	0	0	0	1	1	0	1	0	0	1	0

SITE NUMBER: PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN		1	0	2	0	0	0	0	0	0	2	2	0	0	0	2
BASALT	2	2	0	0	0	1	0	0	1	0	1	1	0	1	0	0
CHERT	4	4	0	0	1	1	0	0	2	2	0	2	0	1	1	0
CHALCEDONY	4	2	0	2	0	1	0	0	1	1	0	1	0	0	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12465 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	10	8	1	1	1	3	0	0	4	0	4	4	0	2	1	1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12468 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	17	16	0	1	0	5	0	1	6	1	4	5	0	5	0	0
CHERT	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHALCEDONY	8	8	0	0	1	2	0	0	3	2	2	4	1	3	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12468 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
BASALT	14	14	0	0	0	2	0	0	2	1	1	2	0	2	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	2	1	0	1	0	0	0	0	0	0	2	2	0	1	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12483 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	35	22	0	3	2	6	1	3	12	0	6	6	1	4	1	0
BASALT	47	43	0	4	0	11	0	0	11	4	2	6	0	6	0	0
CHERT	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHALCEDONY	41	22	0	19	1	10	0	0	11	14	3	17	0	8	1	3
OTHER	11	6	1	4	0	2	0	0	2	1	0	1	0	1	0	0

SITE NUMBER: 12483 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	8	8	0	0	1	3	0	0	4	1	2	3	1	2	0	0
BASALT	13	10	0	3	1	7	0	0	8	0	3	3	0	2	1	0
CHERT	2	1	0	1	0	0	0	0	0	1	0	1	0	0	0	1
CHALCEDONY	7	4	0	3	0	1	0	0	1	4	0	4	0	3	0	1
OTHER	2	2	0	0	0	2	0	0	2	1	0	1	0	1	0	0

SITE NUMBER: 12483 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	2	2	0	0	0	2	0	0	2	0	0	0	0	0	0	0
BASALT	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0

SITE NUMBER: 12486 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	27	23	1	3	2	1	0	3	6	3	2	5	1	3	1	0
BASALT	101	78	0	23	10	18	0	1	29	38	3	41	5	23	5	8
CHERT	13	9	0	1	0	4	0	0	4	3	0	3	0	3	0	0
CHALCEDONY	15	10	0	5	0	3	0	0	3	6	1	7	0	5	0	2
OTHER	18	9	0	9	1	4	0	0	5	5	0	5	0	2	1	2

SITE NUMBER: 12486 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	DT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	6	5	0	1	0	1	0	1	2	0	1	1	0	1	0	0
BASALT	59	48	0	11	2	17	2	2	23	10	3	13	2	8	0	3
CHERT	3	2	0	1	0	1	0	0	1	0	1	1	0	0	0	1
CHALCEDONY	7	7	0	0	0	2	0	0	2	4	1	5	0	5	0	0
OTHER	3	3	0	0	0	2	0	0	2	1	0	1	0	1	0	0

SITE NUMBER: 12486 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	11	10	0	1	1	2	0	0	3	2	4	6	0	4	1	1
BASALT	62	50	0	12	4	20	0	0	24	22	3	25	2	20	2	1
CHERT	12	8	0	4	1	2	0	0	3	5	0	5	1	4	0	0
CHALCEDONY	11	8	0	3	0	2	0	0	2	3	1	4	0	3	0	1
OTHER	15	14	0	1	1	3	0	0	4	7	1	6	1	7	0	0

SITE NUMBER: 12486 PROVENIENCE NUMBER: 4

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	26	24	0	4	1	5	0	1	7	8	6	14	0	10	1	3
BASALT	187	134	0	53	10	41	0	5	56	49	6	55	6	36	4	9
CHERT	19	16	0	3	0	4	0	0	4	12	0	12	0	10	0	2
CHALCEDONY	29	19	0	10	2	7	1	0	10	9	2	11	2	6	0	3
OTHER	18	10	0	8	0	2	0	0	2	5	0	5	0	3	0	2

SITE NUMBER: 12486 PROVENIENCE NUMBER: 5

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	5	3	0	1	0	1	0	3	4	1	1	2	0	2	0	0
BASALT	88	56	0	32	10	15	2	0	27	34	6	40	9	19	1	11
CHERT	8	5	0	3	1	1	0	0	2	1	1	2	1	1	0	0
CHALCEDONY	35	21	0	14	1	8	0	0	9	11	3	14	1	7	0	6
OTHER	18	12	0	6	3	2	0	0	5	8	0	8	2	3	1	2

SITE NUMBER: 12494 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	17	16	0	1	4	1	0	0	5	7	3	10	1	5	3	1
BASALT	45	45	0	0	6	8	0	0	14	17	1	18	4	13	2	0
CHERT	6	6	0	0	1	0	1	0	2	3	0	3	1	2	0	0
CHALCEDONY	27	25	0	2	4	4	0	0	8	10	2	12	4	7	0	1
OTHER	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	5	4	0	1	1	1	0	1	3	0	1	1	0	0	1	0
BASALT	10	8	0	2	1	3	0	0	4	1	0	1	1	0	0	0
CHERT	1	1	0	0	0	1	0	0	1	0	1	1	0	1	0	0
CHALCEDONY	14	9	0	5	1	3	0	0	4	3	2	5	1	1	0	1
OTHER	8	8	0	0	4	1	0	0	5	4	1	5	3	1	1	0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	54	45	3	6	9	19	0	4	32	14	13	27	6	16	3	1
BASALT	290	278	0	12	19	58	1	1	79	72	13	85	16	63	3	3
CHERT	38	31	0	7	1	4	0	0	5	9	3	12	1	9	0	2
CHALCEDONY	149	126	0	23	5	18	0	0	23	37	20	57	4	39	1	13
OTHER	17	16	0	1	4	0	0	0	4	9	0	9	4	4	0	1

SITE NUMBER: 12494 PROVENIENCE NUMBER: 4

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	77	67	4	6	2	13	1	2	18	6	16	22	1	19	1	2
BASALT	380	347	2	31	26	62	2	0	90	65	11	56	21	64	5	9
CHERT	45	36	0	9	5	1	0	0	6	12	4	16	3	9	2	2
CHALCEDONY	231	199	0	32	8	19	1	1	29	59	33	92	7	64	1	23
OTHER	16	10	0	6	0	1	0	0	1	8	0	8	0	5	0	3

SITE NUMBER: 12494 PROVENIENCE NUMBER: 5

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	CRS	F+D	SAD
OBSIDIAN	32	30	0	2	5	5	1	2	13	2	11	13	3	8	2	0
BASALT	35	35	0	0	4	7	0	0	11	8	2	10	3	6	1	0
CHERT	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	43	40	0	3	3	3	0	0	6	13	4	17	1	13	2	1
OTHER	2	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 6

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	CRS	F+D	SAD
OBSIDIAN	30	27	0	3	4	1	2	1	8	5	5	10	2	5	2	2
BASALT	80	77	0	3	8	21	1	0	30	28	2	30	7	21	1	1
CHERT	22	18	0	4	1	5	0	0	6	4	1	5	1	2	0	2
CHALCEDONY	82	70	0	12	2	22	0	0	24	21	16	37	1	27	1	3
OTHER	8	6	0	2	0	1	0	0	1	3	0	3	0	2	0	1

SITE NUMBER: 12494 PROVENIENCE NUMBER: 7

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0
BASALT	18	16	0	2	2	2	0	1	5	9	0	9	1	5	1	2
CHERT	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHALCEDONY	8	6	0	2	0	3	0	0	3	3	1	4	0	2	0	2
OTHER	1	1	0	0	0	1	0	0	1	1	0	1	0	1	0	0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 8

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	58	63	1	14	6	20	0	8	36	12	14	26	7	16	1	4
BASALT	235	156	0	13	17	49	0	1	67	38	9	47	15	29	2	5
CHERT	20	14	0	6	1	3	0	0	4	9	1	10	0	6	1	1
CHALCEDONY	131	103	0	28	11	9	0	0	20	39	16	55	8	12	3	13
OTHER	7	5	0	2	1	0	0	0	1	3	1	4	0	1	1	2

SITE NUMBER: 12495 PROVENIENCE NUMBER: 1

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	5	5	0	0	0	1	0	0	1	0	2	2	0	2	0	0
BASALT	13	12	0	1	1	2	0	0	3	2	0	2	1	1	0	0
CHERT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	11	11	0	0	2	1	0	0	3	6	1	7	2	5	0	0
OTHER	2	2	0	0	1	1	0	0	2	2	0	2	1	1	0	0

SITE NUMBER: 12495 PROVENIENCE NUMBER: 2

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	44	43	0	1	4	9	0	0	13	7	11	18	2	13	2	1
BASALT	232	210	0	22	12	51	0	0	63	78	4	82	10	67	2	3
CHERT	30	28	1	1	3	7	0	0	10	8	4	12	2	10	1	0
CHALCEDONY	128	55	0	13	10	23	0	0	33	30	19	49	8	37	2	2
OTHER	15	12	0	3	1	2	0	0	3	8	0	8	1	5	0	2

SITE NUMBER: 12456 PROVENIENCE NUMBER: 1

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0
BASALT	3	2	0	1	0	2	0	0	2	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	2	0	1	0	1	0	0	1	3	0	3	0	2	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 2

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	2	2	0	0	0	1	0	1	2	0	0	0	0	0	0	0
BASALT	4	4	0	0	0	0	0	0	0	0	1	1	0	1	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	2	0	1	0	0	0	0	0	1	0	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 3

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
BASALT	3	2	0	1	0	1	0	0	1	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	1	0	0	1	1	0	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 4

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	3	3	0	0	0	1	0	0	1	0	1	1	0	1	0	0
BASALT	4	1	0	3	0	1	0	0	1	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	2	0	1	0	0	0	0	0	1	0	1	0	0	0	1
OTHER	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	1

SITE NUMBER: 12456 PROVENIENCE NUMBER: 5

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	23	23	0	0	0	5	0	3	8	0	2	2	0	2	0	0
BASALT	8	6	0	2	0	2	0	0	2	1	1	2	0	2	0	0
CHERT	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0
CHALCEDONY	5	3	0	2	0	0	0	0	0	1	0	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 6

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	3	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	1	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1

SITE NUMBER: 12496 PROVENIENCE NUMBER: 7

MATERIAL		TYPE OF DEB.			PLATFORM TYPE					CORTEX TYPE			CORTEX PLACEMENT			
	# ART	FREE	BIP	SAD	CTX	FACET	RET	RESH	TOTAL	WW	OT	TOTAL	PLT	DRS	F+D	SAD
OBSIDIAN	5	4	0	1	0	0	0	0	0	0	3	3	0	3	0	0
BASALT	8	7	0	1	1	2	0	0	3	1	1	2	0	1	1	0
CHERT	2	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHALCEDONY	5	4	0	1	1	1	0	0	2	3	0	3	0	2	1	0
OTHER	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 8

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	19	15	3	1	2	2	0	5	5	0	3	3	1	1	1	0
BASALT	8	7	0	1	0	1	0	0	1	4	0	4	0	4	0	0
CHERT	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	3	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 9

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	2	2	0	0	1	0	0	0	1	0	2	2	0	1	1	0
BASALT	6	4	0	2	1	1	0	0	2	2	1	3	0	1	1	1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	2	2	0	0	0	0	0	0	0	1	0	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 10

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	4	3	0	1	0	0	0	0	0	2	0	2	0	1	0	1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	2	1	0	1	0	0	0	1	1	1	0	1	0	0	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 11

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	4	4	0	0	0	2	0	0	2	2	0	2	0	2	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 12

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	1	1	0	0	0	1	0	0	1	0	1	1	0	1	0	0
BASALT	3	3	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 13

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	2	2	0	0	1	0	0	0	1	0	1	1	1	0	0	0
BASALT	4	3	0	1	2	0	0	0	2	3	0	3	2	0	0	1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 14

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	5	4	0	1	0	1	0	0	1	1	0	1	0	1	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 15

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	4	3	0	1	1	0	0	0	1	0	3	3	0	2	1	0
BASALT	7	5	0	2	1	2	0	0	3	2	0	2	1	1	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	1	0	0	0	1	0	1	1	0	0	1	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 16

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	7	7	0	0	1	0	0	0	1	0	3	3	0	2	1	0
BASALT	14	11	1	2	0	5	0	0	5	0	2	2	0	2	0	0
CHERT	2	1	0	1	0	0	0	0	0	1	0	1	0	1	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	1	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 17

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	3	3	0	0	1	0	0	0	1	1	0	1	0	0	1	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	3	0	0	0	0	0	0	0	1	0	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12492 PROVENIENCE NUMBER: 18

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	2	2	0	0	0	0	0	0	0	0	1	1	0	1	0	0
BASALT	6	4	0	2	0	0	0	2	2	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 19

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	1	0	0	0	1	0	0	1	1	0	1	0	1	0	0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12498 PROVENIENCE NUMBER: 20

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	40	40	0	0	0	7	2	5	14	0	5	5	0	5	0	0
BASALT	10	9	0	1	0	1	0	0	1	2	0	2	0	1	0	1
CHERT	2	0	0	2	0	0	0	0	0	1	0	1	0	0	0	1
CHALCEDONY	2	1	0	1	0	1	0	0	1	0	1	1	0	0	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 21

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	55	53	0	2	1	3	0	11	15	0	6	6	1	5	0	0
BASALT	34	29	0	5	2	6	0	1	9	8	1	9	2	6	0	1
CHERT	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	8	5	0	3	0	1	0	1	2	3	0	3	0	2	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12507 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	2	0	1	1	0	1	0	2	1	0	1	1	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12507 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	1	0	0	1	1	0	1	0	1	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12517 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	14	11	0	3	0	3	2	0	5	0	2	2	0	1	0	1
BASALT	143	114	0	29	7	57	0	0	64	51	7	58	6	39	1	12
CHERT	50	36	0	14	4	14	1	1	20	19	12	31	2	19	2	0
CHALCEDONY	212	150	0	62	13	47	0	0	60	30	38	68	12	31	1	24
OTHER	89	65	0	24	3	18	0	0	21	16	0	16	3	10	0	1

SITE NUMBER: 12518 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	34	31	1	2	7	7	0	0	14	0	21	21	4	14	3	0
BASALT	61	56	0	5	3	15	0	0	18	10	0	10	3	7	0	0
CHERT	42	39	0	3	1	12	0	0	13	7	2	9	0	6	1	2
CHALCEDONY	152	147	0	5	7	46	0	0	53	16	16	52	8	45	2	0
OTHER	11	10	0	1	0	3	0	0	3	2	0	2	0	1	0	1

SITE NUMBER: 12518 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	8	8	0	0	2	2	0	0	4	0	3	3	2	1	0	0
BASALT	9	6	0	3	1	2	0	0	3	5	0	5	1	2	0	2
CHERT	12	11	0	1	1	5	0	0	6	4	2	6	1	5	0	0
CHALCEDONY	60	55	0	5	1	20	0	0	21	13	9	22	1	19	0	2
OTHER	3	3	0	0	0	1	0	0	1	1	0	1	0	1	0	0

SITE NUMBER: 12518 PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	P+D	SAD
OBSIDIAN	39	39	0	0	12	9	0	0	21	1	27	28	9	16	3	0
BASALT	64	62	0	2	4	24	0	0	28	17	3	20	3	14	1	2
CHERT	34	34	0	0	1	14	0	0	15	10	5	15	1	14	0	0
CHALCEDONY	170	159	0	11	7	52	0	0	59	26	22	48	3	40	4	1
OTHER	16	15	0	1	0	1	0	0	1	8	0	8	0	7	0	1

SITE NUMBER: 12519 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	1	1	0	0	0	1	0	0	1	0	1	1	0	1	0	0
CHERT	3	2	0	1	0	1	0	0	1	1	1	2	0	1	0	1
CHALCEDONY	3	2	0	1	1	0	0	0	1	2	0	2	0	0	1	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12519 PROVENIENCE NUMBER: 2

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHALCEDONY	3	2	0	1	0	1	0	0	1	0	2	2	0	1	0	1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 1251[illegible] PROVENIENCE NUMBER: 3

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	4	1	1	2	2	0	0	0	2	1	2	3	1	0	1	1
BASALT	17	13	0	4	0	6	0	0	6	4	5	9	0	6	0	3
CHERT	6	6	0	0	1	4	0	0	5	1	0	1	1	0	0	0
CHALCEDONY	11	11	0	0	1	2	1	0	4	6	2	8	1	7	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 12524 PROVENIENCE NUMBER: 1

MATERIAL	# ART	TYPE OF DEB. FREE	BIP	SAD	PLATFORM TYPE CTX	FACET	RET	RESH	TOTAL	CORTEX TYPE WW	OT	TOTAL	CORTEX PLACEMENT PLT	DRS	F+D	SAD
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHERT	2	2	0	0	0	2	0	0	2	0	0	0	0	0	0	0
CHALCEDONY	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 1

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	98.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 3

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	2	4	3	1	0	0	3	1	0	0	1	0	1	0	0	1	0	0	0	0	4	0	0	0	0	0	0	51.0	24.7
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 4

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	2	2	2	0	0	0	2	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0	0	0	0	0	0	59.0	26.8
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	0	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	54.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 8

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	1	2	2	0	0	1	1	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	35.5	17.6
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9139 PROVENIENCE NUMBER: 9

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	3	4	3	1	0	1	2	1	0	0	0	0	4	0	1	4	1	0	0	1	0	0	0	0	0	0	0	35.2	22.8
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34.0	0.0
CHALCEDONY	3	4	3	1	0	1	2	0	1	0	0	0	4	0	0	3	2	0	2	0	1	0	0	0	0	0	1	59.2	5.1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 12

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	3	3	3	0	0	0	2	0	1	0	1	0	2	1	0	2	2	0	2	0	0	0	0	0	0	0	1	33.0	24.7
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 13

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	41.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 14

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	61.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9139 PROVENIENCE NUMBER: 16

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	2	4	4	0	0	0	3	1	0	0	1	0	2	1	0	1	0	1	0	1	2	0	0	0	1	0	0	36.0	11.4
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9139 PROVENIENCE NUMBER: 18

MATERIAL			RETOUCH		OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNC	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	FCT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	5	6	6	0	0	0	2	2	2	0	0	0	3	3	0	1	6	0	5	0	0	0	0	0	0	0	2	41.1	7.1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 19

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	48.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 20

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	1	2	2	0	0	1	1	0	0	0	1	0	2	0	0	1	1	0	2	1	1	0	0	0	0	0	0	64.5	6.3
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 23

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	3	7	0	7	0	1	4	2	0	0	0	1	7	0	0	6	1	0	1	0	1	0	0	0	0	0	0	57.8	16.1
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	4	5	2	3	0	3	1	1	0	0	0	0	5	0	0	4	0	0	2	0	0	0	0	0	0	0	0	56.8	21.1
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 24

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	1	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	63.0	0.0
CHALCEDONY	2	6	3	2	0	2	0	2	0	1	1	0	5	0	0	4	2	0	0	0	0	0	0	0	0	0	1	73.2	15.5
OTHER	1	1	0	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	72.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 25

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	4	6	[illegible]	3	0	1	2	2	0	0	0	0	5	0	0	3	1	0	3	0	0	0	0	0	0	0	0	45.6	11.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	1	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 26

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	6	10	4	6	0	4	3	2	1	0	0	0	9	1	0	13	3	0	0	0	0	0	0	0	0	0	0	62.6	12.3
OTHER	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 9138 PROVENIENCE NUMBER: 27

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	2	3	2	1	0	1	1	0	0	1	1	0	1	1	0	2	1	0	2	0	0	0	1	0	0	0	0	61.0	18.3
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	2	2	1	1	0	1	0	1	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	31.0	9.8
CHALCEDONY	12	17	10	7	0	3	9	4	1	0	3	2	14	3	1	15	7	0	4	0	0	0	0	0	0	0	1	62.7	15.7
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 10110 PROVENIENCE NUMBER: 1

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12161 PROVENIENCE NUMBER: 1

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	5	6	4	1	1	0	4	1	0	1	0	0	5	0	0	3	3	0	0	1	0	0	0	0	0	0	3	70.8	13.6
BASALT	2	2	1	1	0	0	1	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	59.0	14.1
CHERT	7	8	3	5	0	2	2	2	2	0	3	0	8	0	1	5	6	0	0	0	0	0	0	0	0	0	0	61.8	15.8
CHALCEDONY	10	13	2	11	0	2	4	2	5	0	1	1	12	0	2	8	8	0	0	3	0	0	0	0	0	0	0	68.0	13.2
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12161 PROVENIENCE NUMBER: 2

MATERIAL	RETOUCH				OUTLINE						SINSTY		PLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	AAR	AED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RFT	PCL	STR			
OBSIDIAN	5	6	5	1	0	2	2	2	0	0	1	0	3	3	3	3	1	0	1	2	0	0	0	0	0	0	3	44.0	20.6
BASALT	1	4	4	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	3	0	43.7	23.0
CHERT	4	7	3	4	0	0	1	4	2	0	1	0	6	1	0	7	5	0	0	0	0	0	0	0	0	0	0	66.7	18.4
CHALCEDONY	5	8	4	4	0	1	5	0	2	0	1	0	7	0	0	6	2	0	0	0	1	0	0	0	0	1	1	72.5	17.5
OTHER	2	2	0	2	0	0	1	1	0	0	0	0	2	0	0	2	1	0	0	0	0	0	0	0	0	0	0	58.0	18.3

Column groups: RETOUCH (UNI, UND); OUTLINE (BID, CNC, STR, CNV, C-C, PRJ); SINSTY (LAT, TRN); PLCMNT (UNI, BID); SCAR TYPE (C.F, P.S, D.S, CRS, NBL); EDGE ROUNDING (BRD, URD, BVL, FLT); OTHER WEAR (RET, PCL, STR).

SITE NUMBER: 12161 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	42.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12161 PROVENIENCE NUMBER: 4

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	5	11	8	3	0	2	6	2	0	0	0	0	10	1	3	4	4	0	4	1	0	0	1	0	0	0	1	64.1	14.9
BASALT	5	11	5	2	0	4	4	3	0	0	1	0	4	1	1	2	2	1	1	2	4	0	1	0	6	5	0	59.2	22.8
CHERT	18	23	5	13	1	6	6	3	6	0	5	0	21	1	1	13	8	0	1	3	1	0	0	0	0	0	2	72.3	17.8
CHALCEDONY	10	11	3	7	3	0	1	8	4	0	1	1	11	2	0	9	4	0	0	1	0	0	0	0	0	0	0	71.3	11.8
OTHER	4	6	2	3	1	2	3	1	0	0	2	0	5	1	1	3	3	0	0	0	1	0	0	0	0	0	4	74.0	16.5

SITE NUMBER: 12161 PROVENIENCE NUMBER: 5

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	19	19	10	9	0	4	8	5	1	1	3	0	15	2	3	11	5	0	2	4	0	0	0	0	0	0	4	63.0	20.2
BASALT	13	15	5	10	0	0	3	9	3	0	2	0	12	1	0	9	3	0	1	7	3	0	0	0	1	0	0	65.0	13.6
CHERT	3	3	0	2	1	1	1	1	0	0	2	0	3	0	0	3	2	0	0	0	0	0	0	0	0	0	0	59.6	2.8
CHALCEDONY	17	20	10	9	1	2	8	6	2	1	3	0	16	3	1	10	10	1	1	1	1	1	0	0	2	0	3	62.6	19.7
OTHER	7	8	4	4	0	0	5	1	1	1	1	1	7	1	1	6	0	1	2	2	0	1	0	0	0	0	1	63.5	16.8

SITE NUMBER: 12438 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	3	4	3	1	0	0	3	1	0	0	1	1	4	0	1	3	2	0	3	1	0	0	0	0	0	0	0	58.2	25.5
BASALT	1	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	60.0	0.0
CHERT	4	5	5	0	0	0	3	1	1	0	0	0	4	1	0	3	0	0	2	3	0	0	0	0	1	0	1	55.4	22.5
CHALCEDONY	1	1	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	100.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12438 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	0	1	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	32.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12442 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	16	18	13	5	0	5	6	5	1	1	2	0	15	1	0	15	3	0	6	1	1	1	0	0	0	0	1	73.0	13.7
BASALT	7	9	6	0	1	2	3	2	0	2	1	0	5	1	0	5	1	0	1	2	2	0	0	0	0	0	0	70.7	4.8
CHERT	1	1	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	45.0	0.0
CHALCEDONY	1	1	0	1	0	1	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	58.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12442 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	2	2	0	0	0	1	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	37.0	1.4
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12443 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	2	2	2	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0	0	0	0	0	1	0	1	0	0	41.0	0.0
CHERT	1	4	4	0	0	1	0	2	1	0	0	0	2	2	0	4	0	0	0	2	1	0	0	0	2	0	0	40.0	7.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12443 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	8	10	7	3	0	5	4	1	0	0	0	0	10	0	1	9	0	0	8	0	1	0	0	0	0	0	0	58.4	22.9
BASALT	11	13	12	0	1	1	6	5	1	0	0	0	6	6	1	0	1	1	3	2	1	0	1	0	2	1	1	31.4	19.2
CHERT	6	6	5	1	0	0	5	0	1	0	0	0	5	0	0	4	0	2	1	1	0	0	0	0	0	0	0	48.5	10.8
CHALCEDONY	1	1	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	67.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	UNI	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNI	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	2	2	0	0	1	0	0	0	1	0	0	2	0	1	2	0	0	0	0	0	0	0	0	0	0	0	32.0	0.0
BASALT	16	20	11	7	2	7	5	8	0	0	6	5	14	1	0	12	4	0	0	8	1	0	0	0	5	0	2	68.3	16.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	0	1	0	0	1	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	75.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 3

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNB	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	2	2	1	1	0	1	1	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	34.5	24.7
BASALT	3	4	4	0	0	2	1	1	0	0	0	0	3	1	0	4	2	0	0	0	0	0	0	0	0	0	0	47.0	2.1
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	42.0	0.0
OTHER	1	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	39.0	0.0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 4

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNB	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	7	7	3	4	0	2	3	0	1	0	0	0	7	0	0	5	2	0	3	0	0	0	0	0	0	0	0	71.1	10.8
BASALT	12	14	13	1	0	6	3	1	4	0	0	0	12	0	0	8	4	0	0	1	0	0	0	0	1	1	0	69.5	20.6
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	4	4	2	2	0	1	0	1	0	0	0	1	4	0	0	3	0	0	1	0	0	0	0	0	0	0	0	76.7	15.7
OTHER	1	1	0	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	35.0	0.0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 5

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNB	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	1	2	0	1	1	0	1	1	0	0	0	1	2	0	0	2	0	0	1	0	0	0	0	0	0	0	0	70.5	3.5
BASALT	1	1	0	1	0	0	0	1	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	54.0	0.0
CHERT	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12444 PROVENIENCE NUMBER: 6

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNB	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	2	2	1	1	0	0	1	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	46.5	4.9
BASALT	5	5	5	0	0	3	1	1	0	0	0	0	4	1	0	2	2	1	0	1	0	0	0	0	0	0	0	72.4	15.7
CHERT	3	3	3	0	0	1	1	1	0	0	0	0	3	0	0	2	1	0	1	0	0	0	0	0	0	0	0	68.6	24.0
CHALCEDONY	3	3	3	0	0	2	1	0	0	0	0	0	3	0	0	3	0	0	1	0	0	0	0	0	0	0	0	76.0	5.2
OTHER	3	3	1	2	0	0	2	1	0	0	1	0	3	0	0	2	0	0	1	0	0	0	0	0	0	0	1	67.0	20.6

SITE NUMBER: 12444 PROVENIENCE NUMBER: 7

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	2	2	2	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	48.5	26.1
BASALT	15	16	15	1	0	7	7	2	0	0	3	2	12	1	0	13	1	0	0	3	0	0	0	0	2	0	0	67.6	16.7
CHERT	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	40.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12447 PROVENIENCE NUMBER: 3

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNB	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	3	3	2	0	1	1	0	1	1	0	1	1	0	3	2	0	1	0	0	2	0	0	0	0	0	0	0	39.6	14.5
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	44.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12448 PROVENIENCE NUMBER: 1

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNB	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	1	1	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	29.0	0.0
BASALT	10	15	13	2	0	4	8	2	1	0	1	0	14	1	1	10	2	2	1	5	0	0	0	0	2	0	0	34.9	15.4
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	2	2	2	0	0	0	1	1	0	0	1	0	1	1	0	1	1	0	1	0	0	0	0	0	0	0	0	29.0	1.4
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12454 PROVENIENCE NUMBER: 4

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UNB	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	1	2	2	0	0	1	0	1	0	0	0	0	1	1	0	0	1	1	2	0	0	0	0	0	0	0	0	50.0	16.9
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12454 PROVENIENCE NUMBER: 5

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UNC	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	4	6	5	0	0	1	3	0	0	1	0	0	3	0	0	1	0	0	2	1	2	0	0	0	0	0	0	65.7	40.1
BASALT	14	15	15	0	0	3	10	1	1	0	2	0	10	2	1	4	2	3	3	3	0	1	0	0	3	1	0	42.2	10.7
CHERT	2	3	2	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	2	0	0	37.6	16.0
CHALCEDONY	3	3	3	0	0	0	2	1	0	0	0	0	3	0	0	2	0	0	2	0	0	0	0	0	0	0	1	64.3	22.5
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 1

MATERIAL			RETOUCH		OUTLINE						SINSTY		FLCMNT		SCAR TYPE					EDGE ROUNDING				OTHER WEAR			BCK	MEAN<	S.D.<
	#AR	#ED	UNR	UND	BID	CNC	STR	CNV	C-C	PRJ	LAT	TRN	UND	BID	C.F	P.S	D.S	CRS	NBL	BRD	URD	BVL	FLT	RET	PCL	STR			
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	10	15	11	2	2	1	7	6	1	0	2	0	5	3	0	8	0	3	2	5	1	0	0	0	5	2	2	52.6	16.9
CHERT	1	2	2	0	0	0	0	2	0	0	0	0	1	1	0	2	0	0	1	0	0	0	0	0	0	0	1	49.5	21.9
CHALCEDONY	6	8	8	0	0	2	4	1	1	0	0	0	5	3	0	7	0	0	2	0	0	0	0	0	0	0	1	53.7	25.2
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12456 PROVENIENCE NUMBER: [illegible]

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	1	0	1	0	1	0	0	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	35.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 3

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	4	4	0	0	3	0	1	0	0	0	0	4	0	0	4	0	0	0	0	1	0	0	0	0	0	0	61.5	7.7
BASALT	1	1	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	45.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	1	1	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	37.0	0.0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 4

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	2	2	1	1	0	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	48.0	29.6
BASALT	16	21	19	1	1	2	9	5	5	0	3	0	7	7	1	14	1	2	1	8	2	1	1	0	12	7	3	43.3	15.7
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	5	5	5	0	0	0	3	2	0	0	0	0	2	1	0	3	0	1	2	0	1	0	0	0	0	0	2	43.6	11.8
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 5

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	4	4	0	1	1	1	1	1	1	0	0	0	3	1	0	4	0	0	0	1	0	0	0	0	0	0	0	67.7	14.3
BASALT	9	12	10	2	0	2	7	2	1	0	1	0	5	0	0	9	2	1	1	4	1	0	0	0	4	2	3	58.4	20.0
CHERT	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	31.0	0.0
CHALCEDONY	2	2	1	1	0	1	1	0	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	40.0	21.2
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 6

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	1	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	35.0	0.0
BASALT	6	6	6	0	0	2	4	0	0	0	1	0	4	0	0	3	1	1	1	2	0	0	1	0	2	0	0	36.8	19.8
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	3	4	4	0	0	1	2	0	1	0	0	0	4	0	0	3	0	1	1	0	0	0	0	0	0	0	1	43.7	36.2
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 7

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	2	2	0	0	0	1	1	0	0	0	0	2	0	1	2	0	0	0	2	0	0	0	0	0	0	2	45.5	31.8
BASALT	2	2	2	0	0	0	2	0	0	0	0	0	0	2	0	2	1	1	0	1	0	0	0	0	1	0	0	44.5	17.6
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12456 PROVENIENCE NUMBER: 8

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	3	2	1	0	0	3	0	0	0	0	0	3	0	0	3	0	0	3	0	1	0	0	0	0	0	0	28.3	6.0
BASALT	5	6	5	0	1	2	2	2	0	0	0	0	1	4	0	5	0	0	1	2	0	0	0	0	0	1	0	55.0	11.9
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0	41.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12463 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	7	9	8	1	0	2	4	2	1	0	0	0	7	0	0	6	1	0	0	0	0	0	2	0	0	0	0	31.0	20.9
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	47.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12463 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	32.0	0.0
BASALT	12	19	15	0	0	6	6	4	3	0	0	0	7	3	0	9	2	1	0	5	3	0	4	0	13	2	6	56.7	21.6
CHERT	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	114.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12463 PROVENIENCE NUMBER: 3

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNI	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	PLCMNT UNI	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	2	2	1	1	0	1	0	1	0	0	0	0	1	1	0	2	1	0	0	0	0	0	0	0	0	0	0	76.5	6.3
BASALT	11	12	10	2	0	2	7	2	1	0	0	0	6	2	0	8	0	0	0	2	2	0	1	0	3	1	1	54.0	16.8
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12403 PROVENIENCE NUMBER: 4

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	2	2	1	1	0	0	2	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	74.5	9.1
BASALT	3	4	4	0	0	0	1	1	1	1	0	1	0	2	0	1	0	1	0	2	0	0	1	0	2	0	0	65.6	0.5
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12465 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	2	2	1	1	0	1	1	0	0	0	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	55.0	8.4
CHALCEDONY	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	72.0	0.0
OTHER	1	1	0	1	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	60.0	0.0

SITE NUMBER: 12465 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	3	8	4	4	0	2	3	1	2	0	2	0	8	0	0	8	3	0	1	1	0	0	0	0	0	0	1	79.0	13.0
CHALCEDONY	1	1	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	72.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12465 PROVENIENCE NUMBER: 3

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	2	5	5	0	0	2	1	1	1	0	0	0	4	0	0	1	0	1	0	1	1	0	0	0	0	0	0	48.2	13.6
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12468 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	26.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12463 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	81.0	0.0
BASALT	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	58.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12466 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	2	4	4	0	0	1	1	2	0	0	0	0	3	1	0	2	0	0	2	0	0	0	0	0	0	0	0	49.2	14.6
BASALT	2	2	1	1	0	1	0	0	1	0	1	1	2	0	0	1	0	1	0	1	0	0	0	0	1	0	0	54.0	19.7
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12466 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	2	2	2	0	0	0	0	1	1	0	0	0	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	37.5	10.6
CHERT	1	1	0	1	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	63.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12486 PROVENIENCE NUMBER: 3

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	2	2	1	1	0	0	0	2	0	0	0	0	2	0	0	1	0	0	1	0	0	0	0	0	0	0	0	43.5	2.1
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	16.0	0.0
CHALCEDONY	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49.0	0.0
OTHER	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51.0	0.0

SITE NUMBER: 12486 PROVENIENCE NUMBER: 4

MATERIAL	#AR	#ED	RETOUCH UNF	RETOUCH UND	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRN	PLCMNT UNF	PLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CRS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RIT	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	5	7	4	3	0	0	5	1	1	0	2	1	6	1	0	4	0	0	3	0	0	0	0	0	0	0	1	65.5	16.4
BASALT	5	5	2	2	0	1	2	1	1	0	0	0	4	0	0	4	0	1	0	1	1	0	0	0	0	1	0	68.6	13.5
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	0	0	1	0	0	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	80.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12486 PROVENIENCE NUMBER: 5

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	1	60.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	0	1	0	1	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	77.0	0.0
BASALT	4	4	2	1	1	0	2	1	1	0	1	0	3	1	0	2	1	0	0	1	0	0	0	0	0	0	0	50.5	11.3
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	3	4	2	2	0	1	3	0	0	0	1	0	3	0	0	1	2	0	0	1	0	0	0	0	0	0	0	74.7	28.8
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 3

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	4	6	0	5	1	0	4	2	0	0	0	0	6	0	0	4	0	0	1	0	0	0	0	0	0	0	0	64.8	17.1
BASALT	9	10	7	2	1	1	6	3	0	0	1	1	4	5	3	2	4	0	0	2	1	1	0	0	0	0	0	53.9	16.7
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	2	2	1	1	0	0	1	1	0	0	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	72.5	10.6
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 4

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	4	4	3	1	0	0	1	1	2	0	0	0	3	1	1	2	2	0	0	1	0	0	0	0	0	0	0	57.0	24.0
BASALT	17	21	19	2	0	0	8	8	2	3	5	2	2	8	5	1	2	1	0	10	3	0	1	0	10	12	2	43.6	18.0
CHERT	1	1	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	45.0	0.0
CHALCEDONY	4	4	2	2	0	0	1	3	0	0	2	0	3	1	0	1	2	1	1	0	0	0	0	0	0	0	0	61.5	22.3
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 5

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	49.0	0.0
BASALT	1	1	1	0	0	0	1	0	0	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	34.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	2	3	2	1	0	0	2	1	0	0	1	0	1	2	0	1	0	0	2	0	0	0	0	0	0	0	0	47.3	25.5
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 6

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	2	4	0	4	0	3	1	0	0	0	0	0	3	0	0	1	3	0	0	0	0	0	0	0	0	0	0	75.7	11.2
BASALT	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	33.0	0.0
OTHER	1	1	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	20.0	0.0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 7

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	3	3	3	0	0	0	1	2	0	0	1	0	2	0	1	1	0	0	0	2	0	0	0	0	0	0	0	48.3	13.3
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12494 PROVENIENCE NUMBER: 8

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	8	8	1	7	0	2	1	3	1	1	1	0	8	0	0	6	2	0	1	0	0	0	0	0	0	0	0	71.0	9.7
BASALT	5	5	3	2	0	0	1	3	1	0	1	0	2	0	0	1	2	0	0	1	0	0	0	0	0	0	0	48.0	25.5
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	46.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12495 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	0	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	134.0	0.0
BASALT	1	1	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	85.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	92.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12495 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	RETOUCH UNF	UND	OUTLINE BID	CNC	STR	CNV	C-C	PRJ	SINSTY LAT	TRN	ELCMNT UNC	BID	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	BVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	7	8	6	2	0	1	3	2	2	0	0	0	5	3	0	8	0	1	1	0	0	0	0	0	0	0	0	64.3	24.3
BASALT	17	22	22	0	0	4	8	6	4	0	0	0	14	2	0	14	2	0	0	4	4	0	2	0	10	1	0	78.0	15.5
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	2	2	2	0	0	0	1	1	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	93.5	14.8
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 4

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	46.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 5

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	2	0	1	1	0	2	0	0	0	2	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	67.0	9.8
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 7

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	68.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 8

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	4	4	1	2	1	0	3	1	0	0	0	0	3	1	0	4	1	0	0	0	1	0	0	0	0	0	0	68.0	10.8
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	55.0	0.0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 9

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	1	1	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	42.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 16

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	1	1	1	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	31.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 20

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	4	4	0	3	1	0	3	1	0	0	0	0	3	1	0	4	1	0	0	0	0	0	0	0	0	0	0	67.2	14.5
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12496 PROVENIENCE NUMBER: 21

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	2	1	0	2	1	0	2	1	0	0	1	0	2	1	0	2	1	0	0	2	0	0	0	0	0	0	0	65.0	12.5
BASALT	2	2	1	0	1	0	1	0	1	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	59.5	3.5
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12517 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	4	4	3	1	0	1	2	0	1	0	0	0	3	0	0	0	1	0	2	1	0	0	1	0	1	0	0	49.5	3.8
BASALT	7	8	6	0	0	0	4	2	1	1	0	0	3	0	0	1	1	0	0	5	0	1	1	0	6	0	1	58.8	18.8
CHERT	3	4	4	0	0	0	2	1	1	0	0	0	4	0	0	3	1	0	0	1	0	0	0	0	0	0	0	39.2	16.0
CHALCEDONY	13	16	16	0	0	1	10	5	0	0	0	0	13	1	0	6	3	2	4	3	1	0	0	0	0	0	3	52.9	21.2
OTHER	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	33.0	0.0

SITE NUMBER: 12518 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH UNR	RETOUCH UNC	OUTLINE BID	OUTLINE CNC	OUTLINE STR	OUTLINE CNV	OUTLINE C-C	OUTLINE PRJ	SINSTY LAT	SINSTY TRA	FLCMNT UNC	FLCMNT BID	SCAR TYPE C.F	SCAR TYPE P.S	SCAR TYPE D.S	SCAR TYPE CHS	SCAR TYPE NBL	EDGE ROUNDING BRD	EDGE ROUNDING URD	EDGE ROUNDING BVL	EDGE ROUNDING FLT	OTHER WEAR RET	OTHER WEAR PCL	OTHER WEAR STR	BCK	MEAN<	S.D.<
OBSIDIAN	1	1	0	1	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	67.0	0.0
BASALT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12519 PROVENIENCE NUMBER: 1

MATERIAL	#AR	#ED	RETOUCH LNR	RETOUCH UNR	OUTLINE BIC	OUTLINE CNC	OUTLINE STR	CNV	C-C	PRJ	SINSTY LAT	SINSTY TRN	PLCMNT LNR	PLCMNT BIC	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	EVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	2	2	1	1	0	1	1	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	55.5	10.6
BASALT	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	79.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12519 PROVENIENCE NUMBER: 2

MATERIAL	#AR	#ED	RETOUCH LNR	RETOUCH UNR	OUTLINE BIC	OUTLINE CNC	OUTLINE STR	CNV	C-C	PRJ	SINSTY LAT	SINSTY TRN	PLCMNT LNR	PLCMNT BIC	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	EVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	42.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 12519 PROVENIENCE NUMBER: 3

MATERIAL	#AR	#ED	RETOUCH LNR	RETOUCH UNR	OUTLINE BIC	OUTLINE CNC	OUTLINE STR	CNV	C-C	PRJ	SINSTY LAT	SINSTY TRN	PLCMNT LNR	PLCMNT BIC	SCAR TYPE C.F	P.S	D.S	CRS	NBL	EDGE ROUNDING BRD	URD	EVL	FLT	OTHER WEAR RET	PCL	STR	BCK	MEAN<	S.D.<
OBSIDIAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
BASALT	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	36.0	0.0
CHERT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
CHALCEDONY	2	3	3	0	0	0	1	2	0	0	1	0	3	0	0	1	1	0	1	0	0	0	0	0	0	0	0	47.0	23.6
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0

SITE NUMBER: 5130

MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F1	1	56	3700	44	22	49		0	0	0	0	0	0
F6	1	61	3050	114	63	741	56	0	0	0	0	1	0
							15	0	0	0	0	1	0
F6	1	62	3701	77	45	206		0	0	0	0	0	0
F6	1	63	3050	58	41	445		0	0	0	0	0	0
F7	11	301	3700	66	31	63		0	0	0	0	0	0
F7	11	306	3050	62	55	107		0	0	0	0	0	0
F7	11	309	3050	68	67	199		0	0	0	0	0	0
J11	0	14	3730	80	64	142		0	0	0	0	0	0
955	0	5	3433	10	507	4021		0	0	0	0	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F1	4	37	1051	73	44	207	57	0	0	0	0	1	0
							59	0	0	0	0	1	0
							54	0	0	0	0	1	0
F6	1	58	1051	61	50	123		0	0	0	0	0	0
F6	1	59	1051	63	48	276		0	0	0	0	0	0
F6	2	41	1051	63	39	67		0	0	0	0	0	0
F3	1	2	1090	75	52	58		0	0	0	0	0	0
I13	0	6	1051	57	40	41		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F1	1	14	1053	57	28	64		0	0	0	0	0	0
F1	4	35	1053	47	23	38		0	0	0	0	0	0
F2	1	2	1053	71	43	136		0	0	0	0	0	0
F3	1	18	1310	65	29	64		0	0	0	0	0	0
F4	1	7	1091	44	43	65		0	0	0	0	0	0
F6	1	54	1215	54	21	45		0	0	0	0	0	0
F6	1	57	1215	72	35	169		0	0	0	0	0	0
F7	1	4	1214	49	23	46		0	0	0	0	0	0
D14	0	1	1215	50	50	61		0	0	0	0	0	0
F3	1	1	1053	59	38	60		0	0	0	0	0	0
F14	0	6	1215	56	35	45		0	0	0	0	0	0
F14	0	7	1215	48	34	42		0	0	0	0	0	0
G14	0	9	1215	58	44	48		0	0	0	0	0	0
I9	0	8	1216	61	43	74		0	0	0	0	0	0
J11	0	13	1091	47	30	58		0	0	0	0	0	0
J12	0	15	1053	45	44	40		0	0	0	0	0	0
J15	0	3	1215	42	42	58		0	0	0	0	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F6	1	60	1502	72	30	131		0	0	0	0	0	0

SITE NUMBER: 12161

MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
C2	0	1	3700	65	60	210		0	0	0	0	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F11	1	1	1051	53	37	61		0	0	0	0	0	0
I5	2	1	1051	52	44	70		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F1	2	5	1053	47	37	61		0	0	0	0	0	0
J7	0	5	1053	63	48	56		0	0	0	0	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
I1	2	11	4000	46	34	46		0	0	0	0	0	0

SITE NUMBER: 12442

MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F1	1	21	3700	64	45	89		0	0	0	0	0	0
F1	1	34	3700	100	50	168		0	0	0	0	0	0
A3	1	10	3050	76	48	80		0	0	0	0	0	0
A3	1	11	3050	78	58	191		0	0	0	0	0	0

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
A 3	1	12	3410	56	44	54		0	0	0	0	0	0
J11	1	13	3730	63	34	53	54	0	0	0	0	0	0
F 6	1	1	3730	61	47	58		0	0	0	0	0	0

SITE NUMBER: 12443
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
A11	0	2	3701	41	35	45		0	0	0	0	0	0
E 9	0	1	3701	53	51	73	54	0	0	0	0	1	0
E21	0	2	3700	65	41	72		0	0	0	0	0	0
999	1	2	3700	69	42	45		0	0	0	0	0	0

SITE NUMBER: 12444
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
G24	1	5	3700	78	36	46		0	0	0	0	0	0
H20	1	14	3700	62	42	43		0	0	0	0	0	0
J20	1	3	3700	68	49	56		0	0	0	0	0	0
J26	1	28	3700	105	55	142		0	0	0	0	0	0
J25	1	29	3050	68	46	47		0	0	0	0	0	0
K20	1	1	3701	75	48	73		0	0	0	0	0	0
L16	1	2	3701	62	48	73		0	0	0	0	0	0
M16	1	1	3701	55	50	116		0	0	0	0	0	0
N16	1	2	3701	62	56	103		0	0	0	0	0	0
W22	1	1	3700	63	38	42		0	0	0	0	0	0
W22	1	1	3700	100	67	263		0	0	0	0	0	0
Z 2	1	1	3701	62	71	131		0	0	0	0	0	0
AA 1	1	15	3700	71	42	146		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
V21	1	4	1091	69	67	238		0	0	0	0	0	0
Z 2	1	46	1215	62	55	68		0	0	0	0	0	0

SITE NUMBER: 12447
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
C15	0	1	3701	55	50	54		0	0	0	0	0	0
D12	0	1	3701	58	58	66		0	0	0	0	0	0
G21	0	1	3701	61	54	67		0	0	0	0	0	0
H15	0	1	3050	51	42	60		0	0	0	0	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
I1	0	14	1051	68	66	232		0	0	0	0	0	0
E13	0	5	1051	65	47	79		0	0	0	0	0	0
E14	0	2	1051	60	40	39		0	0	0	0	0	0
F14	0	2	1051	70	37	53		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
I1	0	15	1091	113	66	380		0	0	0	0	0	0
F14	0	1	1091	62	65	210		0	0	0	0	0	0
G12	0	3	1215	63	48	112		0	0	0	0	0	0

SITE NUMBER: 12448
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F1	0	4	3701	107	78	263		1	0	0	0	1	0
F1	0	8	3701	72	68	61	65	0	0	0	0	0	1
F1	0	10	3701	55	76	188	42	0	0	0	0	0	1
							57	0	0	0	0	0	1
F1	0	12	3701	52	40	53		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
F1	0	46	1215	64	38	54		0	0	0	0	0	0

SITE NUMBER: 12454
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BATTER	OTHER
E10	1	1	3701	56	60	222		0	1	0	0	1	0
								0	1	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS	SHAPE OF UTILIZED SURFACE	TYPE OF WEAR

GRID/FPR	LEVEL	ART #	MATERIAL	MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
G 6	1	2	1353	63	51	56		0	0	0	0	0	0

SITE NUMBER: 12456
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
D54	0	2	3050	68	40	59		0	0	0	0	0	0
F16	0	6	3701	107	76	258	54	0	0	0	0	1	0
							55	0	0	0	0	1	0
F50	0	1	3050	74	43	64		0	0	0	0	0	0
H51	0	1	3701	73	55	105		0	0	0	0	0	0
I 6	0	1	3701	140	140	844	58	0	0	0	0	1	0
							63	0	0	0	0	1	0
							71	0	0	0	0	1	1
							46	0	0	0	0	1	0
I62	0	1	3030	78	63	121		0	0	0	0	0	0
K32	0	1	3701	77	78	124		0	0	0	0	0	0
K53	0	1	3050	170	54	635	63	0	0	0	0	1	0
L18	0	2	3701	89	53	182	46	0	0	0	0	1	0
							68	0	0	0	0	1	0
L19	0	1	3050	60	56	138		0	0	0	0	0	0
L54	0	2	3050	63	40	59		0	0	0	0	0	0
M21	0	1	3701	53	71	236	75	0	0	0	0	1	0
								1	0	0	0	0	0
								1	0	0	0	0	0
M22	0	1	3700	63	56	143		0	0	0	0	0	0
N26	0	1	3701	105	67	225	40	0	0	0	0	1	0
N63	0	1	3050	147	108	738	57	0	0	0	0	1	0
							63	0	0	0	0	1	0
U23	0	1	3701	50	46	61		0	0	0	0	0	0
U27	0	1	3701	50	65	279		0	0	0	0	0	0
C27	0	2	3701	65	45	42		0	0	0	0	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
H 7	0	1	1051	71	37	40		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
K17	0	2	1091	55	41	43		0	0	0	0	0	0
M20	0	2	1340	64	43	56		0	0	0	0	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
L51	0	1	4000	118	56	545	73	0	0	0	0	1	0

SITE NUMBER: 12463
MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
E25	0	1	1090	57	42	54		0	0	0	0	0	0

SITE NUMBER: 12468
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
F2	0	1	3701	58	58	71		0	0	0	0	0	0

SITE NUMBER: 12493
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
G16	1	1	3700	72	40	61		0	0	0	0	0	0

SITE NUMBER: 12466
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
H 6	0	3	3701	78	45	124		1	0	0	0	1	0
								1	0	0	0	0	0
G 3	1	1	3701	60	55	120		0	0	0	0	0	0
G12	0	1	3701	100	85	463		0	0	0	0	0	0
H 2	0	1	3701	108	71	392		0	0	0	0	0	0
H 4	1	3	3730	69	61	263		0	0	0	0	0	0
H111	0	1	3050	70	52	117		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS			SHAPE OF UTILIZED SURFACE					TYPE OF WEAR	
				MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BATTER	OTHER
G 7	0	1	1340	61	48	120		0	0	0	0	0	0

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
I 3	0	1	1215	60	52	72		0	0	0	0	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
H 3	1	11	1502	108	90	649		0	0	0	0	0	0

SITE NUMBER: 12494

MATERIAL TYPE: OBSIDIAN

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
I15	1	1	3523	42	30	18		0	0	0	0	0	0
V35	1	5	3523	61	34	55		0	0	0	0	0	0

MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
E14	4	1	3701	63	56	100		0	0	0	0	0	0
E35	1	1	3730	55	46	83		0	0	0	0	0	0
F15	1	1	3700	133	53	321		0	0	0	0	0	0
K20	1	1	3701	73	61	165		0	0	0	0	0	0
K21	0	2	3701	94	70	319		0	0	0	0	0	0
K30	0	2	3050	112	48	131		0	0	0	0	0	0
K33	0	1	3050	74	50	156		0	0	0	0	0	0
L21	1	6	3701	55	49	57		0	0	0	0	0	0
L22	1	6	3700	69	35	77		0	0	0	0	0	0
N33	0	1	3701	58	61	77		0	0	0	0	0	0
R34	1	2	3701	75	60	128		0	0	0	0	0	0
W34	1	10	3701	119	62	469		0	0	0	0	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
U14	1	1	1051	58	47	68		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
F16	1	1	1053	57	39	59		0	0	0	0	0	0
F17	0	2	1310	63	48	104		0	0	0	0	0	0
F37	1	5	1053	41	40	62		0	0	0	0	0	0
G40	8	1	1053	52	41	65		0	0	0	0	0	0
G40	9	5	1215	67	50	60		0	0	0	0	0	0
I16	1	11	1310	71	47	123	64	0	0	0	0	1	0
I20	1	7	1215	49	49	82		0	0	0	0	0	0
I38	1	3	1215	52	37	50		0	0	0	0	0	0
I46	1	5	1215	44	35	49		0	0	0	0	0	0
J21	0	2	1215	60	58	205		0	0	0	0	0	0
J21	0	3	1215	64	48	122		0	0	0	0	0	0
K21	0	1	1215	72	56	212		0	0	0	0	0	0
K23	1	6	1053	62	39	61		0	0	0	0	0	0
M40	1	1	1053	44	39	51		0	0	0	0	0	0
P35	1	18	1215	43	39	53		0	0	0	0	0	0
Q33	1	22	1215	62	42	51		0	0	0	0	0	0
S15	1	1	1053	68	33	72		0	0	0	0	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
Q33	0	3	4000	93	75	230		0	0	0	0	0	0

SITE NUMBER: 12495

MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
G75	1	1	3701	76	61	62		0	0	0	0	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
H71	1	6	1051	72	60	197		0	0	0	0	0	0
K77	1	10	1090	61	63	175		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
I62	1	1	1214	107	58	803		0	0	0	0	0	0
K77	1	11	1214	55	37	86		0	0	0	0	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
F80	1	2	2000	60	55	223		0	0	0	0	0	0

SITE NUMBER: 12496

MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	MAX	MIN	WGHT	EDGE <	RIDGE	CNVX	FLAT	ENTIRE	BITTER	OTHER
F 2	0	1	3001	141	72	422		0	0	0	0	0	0
F 1	0	2	3730	65	61	112		0	0	0	0	0	0
F 3	0	1	3050	115	73	342		0	0	0	0	0	0
F11	0	1	3710	55	63	172		0	0	0	0	0	0
F21	0	1	3710	121	71	307		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
F 1	0	5	1215	45	38	56		0	0	0	0	0	0
F 2	0	4	1215	62	58	159		0	0	0	0	0	0
F 3	0	5	1215	76	36	71		0	0	0	0	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
F 2	0	1	4000	48	48	65		0	0	0	0	0	0
F19	0	2	1501	52	35	64		0	0	0	0	0	0

SITE NUMBER: 12517
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
F1	1	175	3701	52	38	85		0	0	0	0	0	0

SITE NUMBER: 12518
MATERIAL TYPE: OBSIDIAN

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
595	1	28	3525	49	34	53		0	0	0	0	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
P1	3	1	1215	64	64	91		0	0	0	0	0	0
F1	3	17	1215	58	53	94		0	0	0	0	0	0
F1	1	1	1215	66	51	137		0	0	0	0	0	0
595	1	60	1215	53	43	56		0	0	0	0	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
F2	1	53	4001	108	71	445		0	0	0	0	0	0

SITE NUMBER: 12519
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	SHAPE OF UTILIZED SURFACE EDGE <	RIDGE	CNVX	FLAT	ENTIRE	TYPE OF WEAR BITTER	OTHER
F1	2	2	3701	75	38	66		0	0	0	0	0	0

SITE NUMBER: 5138
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
R6	1	55	3700	63	28	55	1	0	0	1	55	21	58	0	0
							2	0	0	1	47	35	60	0	0
R6	1	64	3020	150	41	567	1	1	0	0	>99	>99	73	0	0
R7	11	311	3050	120	47	511	1	0	1	0	>99	50	72	0	0
													55	0	0
							2	0	1	0	90	40	91	0	0
							3	1	0	0	53	42	76	0	0
R5	1	66	3700	61	54	66	1	0	1	0	30	33	54	0	0
							2	0	1	0	33	2	305	4	0
S55	0	6	3700	126	61	135	1	0	1	0	46	13	52	0	0
													59	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
R6	1	34	1051	67	57	152	1	0	1	0	27	23	72	0	0
							2	0	1	0	39	25	76	0	0
G3	1	5	1051	54	27	50	1	1	0	0	19	4	124	0	0
							2	1	0	0	20	10	110	0	0
							3	0	1	0	7	0	509	9	0
C16	0	1	1070	45	30	30	1	1	0	0	24	28	83	0	0
							2	1	0	0	6	3	89	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
R1	1	9	1053	33	17	13	1	1	0	0	32	17	85	0	0
													68	0	0
R1	1	12	1053	40	17	15	1	1	0	0	16	0	809	3	0
													103	0	0
R1	1	15	1053	59	27	15	1	0	1	0	47	30	80	0	0
R1	4	36	1091	69	41	126	1	0	1	0	52	43	68	0	0
													62	0	0
R5	1	65	1215	50	35	101	1	1	0	0	52	23	87	0	0
							2	1	0	0	41	39	97	0	0
R5	1	68	1215	54	63	551	1	0	1	0	45	40	84	0	0
													110	0	0
							2	0	1	0	36	29	88	0	0
H13	0	11	1215	38	24	21	1	0	1	0	35	19	74	0	1
													84	0	0
K13	0	2	1215	27	23	12	1	0	1	0	15	8	118	0	0
													96	0	0

SITE NUMBER: 12161
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
C13	0	1	3050	130	103	645	1	1	0	0	>99	>99	62	1	0
													57	0	1
							2	0	0	1	79	19	82	0	1

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
I1	1	286	1050	69	32	43	1	1	0	0	20	10	90	0	0
													110	0	0
							2	0	1	0	48	28	80	0	1

SITE NUMBER: 12438
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
H1	55	22	3701	68	52	158	1	0	0	1	25	20	72	0	0
							2	0	0	1	54	27	86	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
H1	55	2	1051	64	49	53	1	0	1	0	28	28	92	0	0
							2	0	0	1	20	13	96	0	0
							3	0	1	0	28	25	91	0	0
							4	0	1	0	20	12	88	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
H1	55	25	1091	45	40	24	1	0	1	0	22	11	70	0	1
							2	0	1	0	13	4	71	0	0
H1	55	36	1215	31	20	47	1	0	1	0	21	14	110	0	0

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
							2	0	1	0	36	14	116	0	0

SITE NUMBER: 12442
MATERIAL TYPE: BASALT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
A13	1	1	3703	73	40	57	1	0	0	1	35	25	72	0	0
C11	1	1	3703	54	27	35	1	0	1	0	25	22	95	0	0
							2	1	0	0	54	31	54	0	0

SITE NUMBER: 12443
MATERIAL TYPE: OBSIDIAN

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
C13	0	11	3525	26	22	10	1	0	1	0	25	17	75	0	0
													96	0	0
C14	2	1	3530	46	28	22	1	0	1	0	43	21	66	0	0
													87	0	0

MATERIAL TYPE: BASALT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
H1	1	2	3700	65	63	134	1	0	1	0	60	56	72	0	0
							2	0	1	0	57	40	80	0	0
													64	0	0
C13	0	1	3701	73	53	131	1	0	1	0	42	23	93	0	0
							2	0	0	1	68	62	57	0	0
E21	0	1	3701	72	58	113	1	0	0	1	72	58	72	0	0
													54	1	0
													58	1	0

SITE NUMBER: 12444
MATERIAL TYPE: OBSIDIAN

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
M13	1	1	3523	46	26	25	1	1	0	0	29	23	61	0	0
							2	0	0	1	23	22	51	0	1

MATERIAL TYPE: BASALT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
I23	1	1	3701	101	67	257	1	1	0	0	85	27	83	0	0
							2	0	0	1	52	43	71	0	0
I18	1	1	3701	70	53	85	1	0	1	0	45	22	56	0	0
							2	1	0	0	60	39	63	0	0
L16	1	7	3701	52	25	0	1	0	1	0	38	9	84	0	0
													55	0	0
													84	0	0
													55	0	0
W23	1	1	3701	73	56	76	1	0	1	0	63	11	73	0	0
							2	1	0	0	22	9	97	0	0
V21	1	1	3700	77	77	155	1	0	1	0	79	67	58	0	0
													50	0	0
Z13	1	1	3701	75	62	183	1	0	1	0	61	44	61	0	0
													69	0	0

MATERIAL TYPE: CHERT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
W22	1	2	1030	64	56	105	1	0	0	1	54	31	97	0	0
							2	0	1	0	47	41	73	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
I25	1	25	1215	90	62	321	1	0	0	1	38	27	87	0	0
							2	0	0	1	60	30	83	0	0
							3	0	0	1	27	23	115	0	0

MATERIAL TYPE: OTHER

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
K17	1	5	1501	78	67	132	1	0	0	1	78	50	73	0	0
													95	0	0
													76	0	0

SITE NUMBER: 12447
MATERIAL TYPE: BASALT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
A5	0	1	3701	70	50	68	1	1	0	0	49	29	62	0	0
							2	0	0	1	70	50	75	0	0

MATERIAL TYPE: OTHER

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER

GRID/FER	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	DIMENSIONS WGHT	FLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
F21	0	1	4000	141	104	1095	1	1	0	0	>99	>99	91	0	1
													77	0	1
							2	0	0	1	>99	35	85	0	1
							3	0	1	0	67	57	39	0	1

SITE NUMBER: 12442
MATERIAL TYPE: BASALT

GRID/FER	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	DIMENSIONS WGHT	FLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
P1	0	1	3701	87	69	218	1	0	1	0	65	49	84	0	0
							2	0	1	0	52	38	63	0	0
S13	13	1	3701	70	39	122	1	0	1	0	43	24	65	0	0
							2	1	0	0	42	23	79	0	0

SITE NUMBER: 12454
MATERIAL TYPE: OBSIDIAN

GRID/FER	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	DIMENSIONS WGHT	FLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
C9	1	1	3524	51	27	23	1	1	0	0	52	24	60	0	1

MATERIAL TYPE: BASALT

GRID/FER	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	DIMENSIONS WGHT	FLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
K1	4	1	3701	65	51	61	1	1	0	0	47	23	87	0	0
													122	0	0
							2	0	1	0	4	2	131	0	0
K2	2	1	3701	85	78	231	1	1	0	0	59	55	104	0	0
							2	0	1	0	60	31	64	0	0
D6	1	2	3701	64	25	27	1	0	0	0	0	0	74	0	0
													83	0	0
													115	0	0
D11	1	1	3701	112	75	476	1	0	1	0	89	24	133	0	0
							2	0	1	0	71	75	64	0	1
							3	1	0	0	57	40	95	0	0

SITE NUMBER: 12456
MATERIAL TYPE: BASALT

GRID/FER	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	DIMENSIONS WGHT	FLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
E49	0	1	3050	89	75	181	1	1	0	0	89	75	67	0	0
													73	0	0
E60	0	1	3050	113	65	217	1	0	0	1	71	13	68	0	0
													74	0	0
							2	1	0	0	31	21	67	0	0
F53	0	1	3050	73	60	134	1	1	0	0	39	36	118	0	0
							2	1	0	0	23	17	78	0	0
							3	1	0	0	24	12	127	0	0
F60	0	1	3050	176	110	1366	1	1	0	0	>99	85	97	0	0
							2	1	0	0	88	67	83	0	0
							3	1	0	0	>99	>99	84	0	0
													74	0	0
													86	0	0
G63	0	1	3701	88	80	354	1	0	1	0	73	48	93	0	0
													85	0	0
							2	1	0	0	52	40	103	0	0
I62	0	1	3701	93	40	166	1	1	0	0	54	35	71	0	0
													70	0	0
													61	0	0
J53	0	1	3701	53	71	521	1	0	0	1	90	46	82	0	0
													90	0	0
													86	0	0
J54	0	1	3701	117	105	303	1	1	0	0	89	30	82	0	0
													76	0	0
													72	0	0
							2	0	1	0	40	23	60	0	0
J54	0	2	3701	106	56	235	1	1	0	0	65	78	62	0	0
													55	0	0
J59	0	1	3050	118	54	466	1	0	1	0	69	25	86	0	0
							2	0	1	0	>99	24	119	0	0
J60	0	1	3050	81	79	165	1	1	0	0	57	16	79	0	0
							2	1	0	0	33	18	68	0	0
K24	0	1	3700	80	60	305	1	0	1	0	78	78	96	0	0
							2	0	1	0	79	76	78	0	0
K54	0	1	3701	65	62	121	1	1	0	0	55	15	80	0	0
							2	0	0	1	62	60	65	0	0
L13	0	1	3701	84	76	262	1	0	1	0	51	39	71	0	0
													71	0	0
L23	0	1	3701	86	67	225	1	0	1	0	37	21	83	0	0
													75	0	0
M23	0	1	3050	102	56	166	1	1	0	0	32	22	93	0	0
							2	1	0	0	0	0	0	0	0

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
N22	0	1	3701	75	73	225	1	1	0	C	41	33	79	0	0
							2	1	0	0	69	36	94	0	0
													69	0	0
													86	0	0
N51	0	1	3701	105	102	534	1	C	0	1	69	30	92	0	0
													105	0	0
							2	C	0	1	52	13	81	1	0
O21	C	1	3701	67	53	55	1	1	0	0	52	51	67	0	0
													63	0	0
C22	0	1	3701	54	46	129	1	1	0	C	42	36	111	0	0
													84	0	0
C25	0	1	3701	105	55	333	1	1	0	0	49	47	78	0	0
							2	C	0	1	90	54	80	0	0
													83	0	0
C54	0	1	3050	61	52	113	1	1	0	0	46	40	84	0	0
													71	0	0
C54	1	1	3701	61	45	36	1	0	0	1	35	31	78	0	0
							2	1	0	0	62	27	97	0	0
C55	0	1	3701	59	50	36	1	C	0	1	48	25	65	0	0
							2	C	1	0	42	16	96	0	0
F13	0	1	3701	70	67	131	1	C	0	1	73	58	55	1	0
							2	1	0	C	55	46	74	0	0
F52	0	1	3701	70	51	54	1	0	0	1	68	48	71	0	0
													70	0	0
													83	0	0
													70	0	0
G10	0	1	3050	59	49	232	1	1	0	0	44	43	98	0	0
													118	0	0
													139	0	0
													103	0	0
H 9	0	1	3700	73	70	165	1	C	1	0	72	69	80	0	0
							2	C	1	C	58	16	109	0	0
S10	0	1	3050	75	73	221	1	1	0	C	75	73	93	0	0
													62	0	0
							2	1	0	0	71	54	86	0	0
S11	C	1	3050	69	52	136	1	1	0	C	50	25	91	0	0
							2	C	1	C	69	26	85	0	0
S11	0	3	3700	61	40	57	1	C	1	0	61	33	69	0	0
							2	1	0	0	49	22	91	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
M20	0	1	1091	75	48	177	1	C	1	C	48	37	81	0	0
							2	C	0	1	32	29	109	0	0
M36	C	1	1053	56	45	67	1	1	0	0	39	25	61	0	0
							2	1	0	0	34	28	95	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
K61	0	1	4000	135	115	1303	1	1	0	C	85	83	73	0	0
							2	1	0	0	>99	93	67	0	0
L60	C	1	3101	131	75	343	1	1	0	C	>99	45	69	0	0
							2	1	0	C	>99	45	71	0	0

SITE NUMBER: 12463
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
F 6	0	1	3701	92	63	266	1	0	0	1	31	12	92	0	0
							2	C	1	C	8	7	176	0	0
F27	C	1	3701	69	61	155	1	0	1	0	65	55	61	0	0
							2	0	1	0	42	34	67	0	0
G25	0	1	3701	96	74	257	1	C	1	0	91	61	68	0	0
							2	C	1	C	91	61	66	0	0
							3	C	1	C	91	61	60	0	0
I23	C	1	3701	104	76	547	1	C	0	1	36	33	98	0	0
							2	C	1	C	88	73	86	0	0
							3	C	1	C	55	33	94	0	0
							4	0	1	0	42	27	134	0	0
							5	0	1	0	68	70	104	0	0
J15	0	1	3701	77	64	176	1	0	1	C	34	18	127	0	0
							2	0	1	0	25	14	84	0	0
K20	C	1	3701	115	101	366	1	1	0	0	65	33	84	0	0
							2	1	0	C	88	88	74	1	0
K21	0	5	3701	133	81	1208	1	1	0	0	25	23	102	0	0
							2	1	0	0	33	27	127	0	0
U17	0	1	3701	66	62	313	0	C	0	0	0	0	0	0	0
													0	0	0
													0	0	0
													0	0	0

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
													0	0	0
													0	0	0
													0	0	0
							1	0	0	1	12	12	165	0	0
							2	0	0	1	36	24	145	0	0
D27	0	1	3701	80	50	111	1	0	1	0	35	26	72	0	0
							2	0	1	0	24	18	95	0	0
E16	3	1	3701	113	64	457	0	0	0	0	0	0	0	0	0
							1	0	0	1	43	7	102	1	0
							2	0	1	0	27	14	83	1	0
							3	1	0	0	57	38	100	1	0

MATERIAL TYPE: CHERT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
J18	0	1	1051	113	66	410	1	0	0	1	66	11	110	0	0
							2	0	1	0	15	12	91	0	0
							3	0	1	0	22	22	90	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
C 7	1	1	1215	76	53	142	1	0	1	0	39	12	87	0	0
							2	0	0	1	46	16	80	0	0
							3	0	1	0	31	20	75	0	0

SITE NUMBER: 12463
MATERIAL TYPE: OTHER

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
G13	1	1	4000	53	47	57	1	1	0	0	50	45	68	0	0
							2	1	0	0	33	30	80	0	0

SITE NUMBER: 12466
MATERIAL TYPE: BASALT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
H5	0	13	3730	90	63	561	1	0	1	0	51	25	120	0	0
													126	0	0
													126	0	0
													120	0	0
							2	0	0	1	48	25	130	0	0
													130	0	0
E 2	1	1	3050	111	63	671	1	0	1	0	92	47	80	0	0
							2	0	1	0	61	59	115	0	0
G 2	1	1	3050	100	44	265	1	0	0	1	47	45	46	0	1
							2	1	0	1	47	45	70	0	1
							3	0	0	1	46	28	70	0	0
G 2	1	3	3050	120	77	466	1	1	0	0	52	47	118	0	0
							2	0	1	0	84	50	60	0	0
							3	1	0	0	>99	50	72	0	0
													82	0	0
													55	0	0
													76	0	0
H 3	0	1	3701	62	54	137	1	0	0	1	2	54	85	0	0
													91	0	0

MATERIAL TYPE: CHERT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
C10	0	3	1051	53	38	61	1	1	0	0	35	28	88	0	0
							2	0	0	1	43	33	87	0	0
J 4	1	2	1403	62	50	126	1	1	0	0	47	11	120	0	0
							2	0	1	0	56	52	73	0	0
L 5	0	1	1400	91	70	145	1	0	1	0	22	20	135	0	0
							2	1	0	0	42	20	97	0	0
							3	1	0	0	91	70	49	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
K 5	0	1	1215	43	42	52	1	0	0	1	42	42	[illegible]	0	0
							2	0	1	0	22	18	111	0	0
							3	0	1	0	20	18	112	0	0

MATERIAL TYPE: OTHER

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER
E10	0	7	1502	65	37	305	1	0	1	0	47	35	78	0	0
							2	0	0	1	47	44	96	0	0

SITE NUMBER: 12459
MATERIAL TYPE: BASALT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	DIMENSIONS MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	PLATFORM MULTIFACET	SIZE MAX	SIZE MIN	PLAT ANGLE	UTILIZATION BATTER	UTILIZATION OTHER

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
F40	[illegible]	2	3701	73	68	240	1	1	0	C	55	52	80	0	0
							2	1	0	0	75	41	69	0	0
							3	1	C	C	55	43	86	0	0
													95	0	0
F43	2	5	3701	113	67	355	1	1	0	C	31	14	94	0	0
													71	0	0
							2	C	1	C	>99	67	81	0	0
F4C	3	1	3701	58	45	45	1	1	0	0	45	23	69	0	0
													87	0	0
G15	1	1	3700	51	39	65	1	C	0	1	51	38	82	0	0
							2	1	0	C	41	16	66	0	0
H15	1	1	3700	108	65	148	1	1	0	C	67	43	32	0	0
													83	0	0
H17	1	2	3050	65	54	172	1	C	1	0	28	24	43	C	0
							2	C	1	C	59	33	104	0	0
F36	1	1	3700	110	62	751	1	1	0	C	>99	82	79	0	0
													66	0	0
							2	1	0	C	73	52	85	0	0
I36	1	1	3700	74	68	255	1	C	0	1	49	32	76	0	0
							2	1	0	0	37	19	85	0	0
J22	3	4	3701	130	51	330	1	C	1	0	>99	91	59	0	0
													71	0	1
K23	1	1	3700	86	59	204	1	C	1	0	52	35	91	0	0
													89	0	0
L22	1	6	3050	115	78	630	1	1	0	0	68	51	64	0	0
													55	0	0
							2	1	0	0	50	60	68	0	0
L22	1	7	3050	112	62	550	1	1	0	0	76	58	69	0	0
							2	1	0	C	82	47	80	0	0
L40	1	1	3701	87	78	304	1	C	0	1	73	40	58	0	0
													86	0	0
							2	C	0	1	45	30	59	0	1
							3	C	0	1	45	22	72	0	1
C41	C	1	3701	80	58	187	1	1	0	0	70	23	64	0	0
													75	0	0
							2	C	1	0	37	20	72	0	0
O33	1	4	3701	85	64	220	1	1	0	0	44	33	85	1	0
							2	C	1	0	36	40	69	0	0
O33	1	6	3701	69	52	83	1	1	0	0	61	33	92	0	0
							2	1	0	0	25	29	77	1	0
O35	1	1	3701	72	41	75	1	1	0	0	59	30	51	0	0
							2	C	1	0	55	35	58	0	0
T34	1	1	3400	85	66	236	1	C	1	0	65	66	64	0	0
													65	0	0
W10	1	4	3701	54	43	73	1	1	0	C	35	34	75	0	0
							2	C	0	1	42	41	72	0	0
													63	0	0
W35	1	1	3701	60	50	131	1	C	1	0	60	46	86	0	0
							2	C	1	0	25	23	65	0	0
X37	1	1	3701	72	53	105	1	C	1	0	39	26	71	0	0
							2	C	0	1	72	53	70	0	0
							3	C	0	1	49	30	52	0	0

MATERIAL TYPE: CHERT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
U33	1	25	1051	112	112	1042	1	1	0	0	>99	45	116	0	0
							2	0	0	1	89	75	89	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
I37	1	16	1215	73	70	233	1	1	0	0	73	66	74	0	0
													78	0	0
							2	1	0	0	47	21	92	0	0
							3	1	0	0	43	35	86	0	0
J23	2	2	1310	49	42	44	1	1	0	0	40	27	89	0	0
													77	0	0
F36	1	17	1215	54	40	65	1	C	1	C	35	38	71	0	0
							2	C	1	0	45	26	72	0	0

SITE NUMBER: 12455
MATERIAL TYPE: BASALT

GRID/FEA	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
G78	1	1	3050	94	70	409	1	C	0	1	13	6	121	0	0
													121	0	0
							2	1	0	0	18	7	119	0	0
G78	1	2	3050	110	67	669	1	1	0	0	14	9	114	0	0
							2	1	0	0	35	29	115	0	0
							3	1	0	0	73	65	118	0	0
I77	1	1	3701	120	91	1115	1	C	0	1	31	20	160	0	0

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
							2	0	1	0	79	50	134	1	0
177	1	20	3701	69	60	164	1	0	1	0	33	15	97	0	0
							2	0	1	0	30	25	97	0	0

MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
L74	1	1	1050	113	56	550	1	0	1	0	57	34	89	0	0
							2	0	1	0	45	11	96	0	0
							3	0	1	0	45	14	84	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
G76	1	1	1215	73	24	80	1	0	1	0	73	26	92	0	0
							2	0	1	0	73	26	78	0	0

SITE NUMBER: 12456
MATERIAL TYPE: BASALT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
P 8	3	33	3050	113	100	726	1	1	0	0	50	35	61	0	0
							2	0	1	0	60	47	57	0	0
							3	0	1	0	60	60	70	0	0
							4	0	1	0	58	51	51	0	0
P16	0	5	3050	84	59	232	1	1	0	0	81	62	65	0	0

MATERIAL TYPE: OTHER

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
F 2	0	2	4000	130	65	521	1	1	0	0	>99	85	76	0	0
							2	1	0	0	>99	85	87	0	0

SITE NUMBER: 12519
MATERIAL TYPE: CHERT

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
H2	1	92	1070	79	53	247	1	0	0	1	39	21	85	0	0
							2	1	0	0	58	64	135	0	0

MATERIAL TYPE: CHALCEDONY

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	PLAT #	TYPE OF CORTEX	PLATFORM FACET	MULTIFACET	SIZE MAX	MIN	PLAT ANGLE	UTILIZATION BATTER	OTHER
H1	1	2	1215	53	48	64	1	0	1	0	32	26	79	0	0
							2	0	1	0	32	26	92	1	0
							3	0	1	0	24	20	96	0	0
							4	0	1	0	32	26	123	0	0

SITE NUMBER: 9138

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
113	0	11	4000	57	68	480	1	0	0	1	0

SITE NUMBER: 12161

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
11	1	60	4000	60	45	83	1	0	0	1	0

SITE NUMBER: 12438

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
R1	55	3	4000	138	135	1500	1	0	1	0	0
							2	0	1	0	0
R1	59	4	4000	165	163	3000	1	0	1	0	0
R1	59	7	4000	200	155	3000	1	0	1	0	0
							2	0	1	0	0
							3	0	1	0	0

SITE NUMBER: 12444

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
A19	1	1	4000	65	51	203	1	0	0	0	1
AA 2	1	17	4000	112	77	596	1	0	1	0	0
							2	0	0	1	0

SITE NUMBER: 12456

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
C64	0	1	4526	65	78	332	1	0	1	0	0
							2	0	1	0	0
[illegible]3	0	3	4000	93	77	483	1	0	1	0	0

SITE NUMBER: 12463

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
L24	0	1	3050	55	68	874	1	0	1	0	0
							2	0	0	0	1
							3	0	1	0	0

SITE NUMBER: 12468

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
P2	0	19	3701	70	68	313	1	0	1	0	0

SITE NUMBER: 12483

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
J14	1	10	4000	55	47	105	1	0	0	1	0

SITE NUMBER: 12486

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
B 4	0	1	4000	150	95	1606	1	0	1	0	0
							2	0	0	0	1
							3	0	0	0	1
B 7	0	4	4000	130	105	1119	1	0	1	0	0
							2	0	0	0	1
							3	0	0	1	0
E 7	0	5	4000	65	78	496	1	0	1	0	0
E 2	1	3	4000	120	113	557	1	0	1	0	0
							2	0	0	1	0
							3	0	0	0	1
G 4	1	21	1502	106	105	616	1	0	1	0	0
							2	0	1	0	0
F10	0	1	4000	110	77	849	0	0	0	0	0

SITE NUMBER: 12494

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
C16	0	2	4000	150	73	1074	1	0	0	1	0
C39	3	4	4000	59	70	633	1	0	0	1	0
							2	0	0	1	0
C40	11	1	4000	125	116	408	1	1	0	0	0
I30	0	4	3101	112	53	735	1	1	0	0	0
I46	1	8	4000	127	51	588	1	0	0	0	1
J38	1	27	4000	197	68	48	1	0	0	0	0

							2	)	0	1	C
K21	0	1	4050	154	112	1170	1	0	1	0	C
K22	1	7	4100	63	60	118	1	)	0	0	0
L33	1	24	4000	60	50	112	1	0	0	1	0

SITE NUMBER: 12496

GRID/FPR	LEVEL	ART #	MATERIAL	DIMENSIONS MAX	MIN	WGHT	BATTER LOCUS #	SHAPE OF BATTERED SURFACE ENTIRE	RIDGE	CONVEX	FLAT
P17	C	7	4030	112	50	436	1	0	0	1	0

GRID/FPR	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	X-SECTION	# GROUND SURF	UTILIZATION	LENGTH	WIDTH	THICK
SITE NUMBER: 5130											
TWO-HAND MANOS											
R4	1	1	2200	WHOLE	UNMOD.	RECTANG.			14	13	6
K13	0	1	3431	WHOLE	UNMOD.	RECTANG.	2		21	3	2
IND. FRAGMENTS											
R8	1	1	3431		UNKNOWN	UNKNOWN					
R8A	1	1	2010	FRAG.	UNKNOWN	RECTANG.	2				
SITE NUMBER: 12161											
ONE-HAND MANOS											
R1E	2	1	2120	FRAG.	UNMOD.	RECTANG.	2	PECKED LAT. STRIAE			
R1B	2	2	2020	FRAG.	PECKED	RECTANG.	2	PECKED LAT. STRIAE			
TWO-HAND MANOS											
E 7	0	1	3413	FRAG.	GROUND	RECTANG.	2	LAT. STRIAE			
SITE NUMBER: 12430											
ONE-HAND MANOS											
P1	99	0	3350	FRAG.	UNKNOWN			UNKNOWN LAT. STRIAE			
R1	99	5	4000	WHOLE	UNMOD.	RECTANG.	1	PECKED	14	9	4
R1	99	6	4000	WHOLE	UNMOD.	RECTANG.	1	PECKED BATTERING LAT. STRIAE	14	13	7
TWO-HAND MANOS											
R1	99	6	3430	WHOLE	UNMOD.	R. TRIANG.	1		16	11	7
IND. FRAGMENTS											
R?	99	2	2020	FRAG.	GROUND	TRAPEZOID	2	LONG. STRIAE			
SITE NUMBER: 12444											
TWO-HAND MANOS											
H3 2	1	1	4000	FRAG.	UNMOD.	RECTANG.	1				
IND. FRAGMENTS											
L18	1	1	4000	FRAG.		RECTANG.	1	PECKED			
L20	1	1	4000	FRAG.	UNMOD.	RECTANG.	1	PECKED			
SITE NUMBER: 12454											
TWO-HAND MANOS											
R1B	4	1	3430	WHOLE	PECKED	RECTANG.	2	PECKED ROT. STRIAE	20	13	4
R2	3	1	3430	FRAG.	PECKED	RECTANG.	2	PECKED			
SITE NUMBER: 12456											
TWO-HAND MANOS											
M3C	0	1	4000	WHOLE	PECKED	RECTANG.	2	LAT. STRIAE PIGMENT	17	11	6
SITE NUMBER: 12463											
IND. FRAGMENTS											
M22	0	1	3430		UNKNOWN	UNKNOWN		UNKNOWN			
SITE NUMBER: 12486											
ONE-HAND MANOS											
G 7	0	1	2300	WHOLE	UNMOD.	RECTANG.	1	LONG. STRIAE	10	8	4
H1C	0	1	4000	WHOLE	PECKED	RECTANG.	1	PECKED	13	8	6
TWO-HAND MANOS											
P2	0	1	3431	WHOLE	UNMOD.	RECTANG.	1		21	11	6
SITE NUMBER: 12494											

ONE-HAND MANOS											
J21	0	1	4030	WHOLE	PECKED	UNKNOWN		UNKNOWN	14	13	5
J21	0	2	5559	WHOLE	GROUND	UNKNOWN		PECKED			
K20	0	1	3350	WHOLE	UNMOD.	RECTANG.	1	PIGMENT	12	3	7
L23	1	1	3350	FRAG.	UNMOD.	RECTANG.	1	PECKED			
								LAT. STRIAE			
L33	(	1	4030	WHOLE							
				FRAG.	UNMOD.	RECTANG.	2	LAT. STRIAE	13	13	6
L33	0	2	4030	WHOLE							
				FRAG.	UNMOD.	RECTANG.	2	LAT. STRIAE	12	8	5
								PIGMENT			
M33	0	1	4000	WHOLE	UNMOD.	RECTANG.	1		12	3	6
N35	0	1	4000	WHOLE	UNMOD.	RECTANG.	1	LAT. STRIAE	13	13	5
P33	1	1	3030	FRAG.	UNMOD.	RECTANG.	2				
P33	1	4	4000	WHOLE	PECKED	RECTANG.	2	PECKED	13	13	5
T33	1	1	4030	FRAG.	UNMOD.	RECTANG.	1	PECKED			
								LAT. STRIAE			
W10	0	1	4000	WHOLE	PECKED	UNKNOWN		PECKED	41	2	4
								BATTERING			
								PECKED			
W36	1	1	4300	WHOLE	UNMOD.	RECTANG.	1		13	8	4
Z36	0	2	4030	FRAG.	PECKED	RECTANG.	1	PECKED			
TWO-HAND MANOS											
K37	1	1	4000	FRAG.	GROUND	RECTANG.	1				
IND. FRAGMENTS											
I32	0	1	4000		UNMOD.	RECTANG.	1				
K21	6	1	4030	FRAG.	PECKED	RECTANG.	1	PECKED			
K23	1	1	4030	WHOLE	UNMOD.	RECTANG.	1		7	6	3
P33	1	2	4000	FRAG.	GROUND + PECKED	RECTANG.	1	PECKED			
P33	1	3	9999	WHOLE	PECKED	RECTANG.	1	PECKED	14	13	6
T34	1	1	4030	FRAG.	UNMOD.	RECTANG.	1				
T34	1	2	3430	FRAG.	GROUND	RECTANG.	2				

SITE NUMBER: 12455

GRID/FPR	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	X-SECTION	# GROUND SURF	UTILIZATION	DIMENSIONS LENGTH	WIDTH	THICK
ONE-HAND MANOS											
I73	1	1	3330	FRAG.	UNMOD.	RECTANG.	1				
J66	1	1	3431	WHOLE	UNMOD.	RECTANG.	1	PECKED	11	3	5
IND. FRAGMENTS											
F71	1	1	3350	FRAG.	UNKNOWN	UNKNOWN		UNKNOWN			
F75	1	1	3721	FRAG.	UNKNOWN	UNKNOWN		UNKNOWN			
J76	1	1	3430	FRAG.	UNKNOWN	I. TRIANG.	2	PECKED			

SITE NUMBER: 12456

GRID/FPR	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	X-SECTION	# GROUND SURF	UTILIZATION	DIMENSIONS LENGTH	WIDTH	THICK
ONE-HAND MANOS											
P17	0	3	4000	WHOLE	GROUND	RECTANG.	1		10	3	2
TWO-HAND MANOS											
E16	0	1	2050	FRAG.	GROUND + PECKED	RECTANG.	1	PECKED			
F16	0	2	2050	WHOLE	GROUND + PECKED	R. TRIANG.	1	PECKED	15	12	6

SITE NUMBER: 12518

GRID/FPR	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	X-SECTION	# GROUND SURF	UTILIZATION	DIMENSIONS LENGTH	WIDTH	THICK
IND. FRAGMENTS											
P1	3	1	3050	FRAG.	UNMOD.	RECTANG.	1	LAT. STRIAE			
P1	3	2	3050	FRAG.	UNMOD.	RECTANG.	1	LONG. STRIAE			

SITE NUMBER: 12519

GRID/FPR	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	X-SECTION	# GROUND SURF	UTILIZATION	DIMENSIONS LENGTH	WIDTH	THICK
ONE-HAND MANOS											
P1	1	2	3330	WHOLE	UNKNOWN	UNKNOWN		UNKNOWN	18	13	6
IND. FRAGMENTS											
P1	1	3	3330	FRAG.	UNKNOWN	UNKNOWN		UNKNOWN			
P1	1	4	3030	FRAG.	UNKNOWN	UNKNOWN		UNKNOWN			

SITE NUMBER: 12161

GRID/FFF	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
IND GRND ST FRG									
I 5	0	1	3430		UNKNOWN	UNKNOWN			
G 6	0	1	3430		UNKNOWN	UNKNOWN			
G 6	0	2	3430		UNKNOWN	UNKNOWN			
G 7	0	1	3430		UNKNOWN	UNKNOWN			
I 8	0	1	3430		UNKNOWN	UNKNOWN			

SITE NUMBER: 12438

GRID/FFF	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
IND GRND ST FRG									
R1	59	1	4000	FRAC	UNMOD	PECKED			

SITE NUMBER: 12442

GRID/FFF	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
SLAB METATES									
B13	0	1	3050	FRAC	UNMOD	PECKED			

SITE NUMBER: 12444

GRID/FFF	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
IND METATE FRAG									
I23	1	1	5595	WHOLE	UNKNOWN	UNKNOWN			
J24	1	1	5599	WHOLE	UNKNOWN	UNKNOWN			
BF 2	1	1	5595	WHOLE	UNKNOWN	UNKNOWN			
BB34	0	1	3050	FRAC	UNMOD	LONG. STRIAE			
DD 4	1	1	4000	WHOLE	UNKNOWN	UNKNOWN			
IND GRND ST FRG									
L18	1	1	3050		UNKNOWN	LONG. STRIAE			
M18	1	1	3030	WHOLE	UNKNOWN		15	13	5

SITE NUMBER: 12452

GRID/FFF	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
SLAB METATES									
C43	0	1	3430	FRAC	UNMOD				
M30	0	2	3730	FRAC	GROUND				
M30	0	3	3730	FRAC	UNMOD				
BASIN METATES									
C24	0	1	2030	FRAC	GROUND + PECKED	LAT. STRIAE			
P24	1	1	3030	FRAC	FLAKED	LAT. STRIAE			
IND METATE FRAG									
D34	0	1	3000	FRAC	GROUND + PECKED	LONG. STRIAE			
F20	0	1	3430	FRAC	UNMOD				
N30	1	1	3050	FRAC		PECKED			
C13	0	1	3430	FRAC	FLAKED				
C34	0	1	3730	FRAC	PECKED	LAT. STRIAE			
IND GRND ST FRG									
L24	0	1	2030	WHOLE	GROUND	LONG. STRIAE	18	13	2
O25	0	1	3050	FRAC	UNMOD	LAT. STRIAE			

SITE NUMBER: 12463

GRID/FFF	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
SLAB METATES									
L21	0	1	3430	FRAC	PECKED	PECKED			
L21	0	2	3430	FRAC	PECKED	PECKED			
BASIN METATES									
Q 3	0	1	3430	FRAC	GROUND	LAT. STRIAE			

SITE NUMBER: 12466

GRID/FFF	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
BASIN METATES									
P2	0	1	3430	FRAC	GROUND	PECKED			

SITE NUMBER: 12483

GRID/FFF	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
IND GRND ST FRG									
J14	1	1	2020	WHOLE	PECKED	GRIND ALL SURF	8	6	3

SITE NUMBER: 12486

GRID/FFF LEVEL ART # MATERIAL CONDITION MANUFACTURE UTILIZATION DIMENSIONS

GRID/FEA	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	LENGTH	WIDTH	THICK
SLAB METATES									
A 7	0	1	3430	WHOLE	UNMOD	PECKED	20	11	5
						LAT. STRIAE			
IND METATE FRAG									
F 1	1	1	5555	WHOLE	UNMOD	PECKED	28	30	10
IND GRND ST FRG									
111	1	1	3401	FRAG	UNKNOWN				

SITE NUMBER: 12494

GRID/FEA	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	DIMENSIONS LENGTH	WIDTH	THICK
SLAB METATES									
J38	2	1	3050	FRAG	UNKNOWN	PECKED			
Z36	0	1	3050	FRAG	UNMOD				
BASIN METATES									
K21	0	1	3430	WHOLE	UNMOD		39	27	3
K33	1	1	3430	FRAG	UNMOD				
TROUGH METATES									
K3[illegible]	0	1	3050	WHOLE	UNMOD	PECKED	41	29	1
						LONG. STRIAE			
IND METATE FRAG									
J22	3	1	3050	FRAG	UNMOD	LONG. STRIAE			
J31	0	1	3430		UNKNOWN				
L40	1	1	3050	FRAG	UNKNOWN	PECKED			
L41	0	1	5559	FRAG	UNMOD				
C34	0	1	3030	FRAG	UNMOD	PECKED			
G34	1	1	3050	FRAG	UNKNOWN	PECKED			
S35	0	1	3430	FRAG	UNMOD				
W11	0	1	3430	FRAG	UNMOD				
W11	0	2	3430	FRAG	UNMOD				
IND GRND ST FRG									
F40	2	1	3430	FRAG	UNKNOWN	UNKNOWN			
L21	2	1	2610	WHOLE	GROUND	GRIND ALL SURF	8	6	3
O33	1	1	3050	FRAG	UNKNOWN				
S34	1	1	4000	FRAG	UNKNOWN				

SITE NUMBER: 12495

GRID/FEA	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	DIMENSIONS LENGTH	WIDTH	THICK
SLAB METATES									
I68	1	1	3432	FRAG	PECKED	PECKED			
J66	1	2	3430	FRAG	PECKED	PECKED			
						LONG. STRIAE			
BASIN METATES									
I68	1	2	3432	FRAG	PECKED	PECKED			
I68	1	3	3432	FRAG	PECKED	PECKED			
K74	1	1	5555	FRAG	PECKED	PECKED			
						LONG. STRIAE			
IND METATE FRAG									
J65	1	1	5599	FRAG	PECKED	LONG. STRIAE			

SITE NUMBER: 12496

GRID/FEA	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	DIMENSIONS LENGTH	WIDTH	THICK
SLAB METATES									
P 7	0	1	3430	WHOLE		PECKED	25	17	8
						LONG. STRIAE			
						PIGMENT			
P 8	0	1	3050	WHOLE	UNMOD	PECKED	41	23	9
P 9	0	1	5555	WHOLE	UNMOD	LONG. STRIAE	41	36	15
						RCT. STRIAE			
F17	0	2	3050	FRAG	UNMOD	LONG. STRIAE			
F21	0	1	3050	WHOLE	GROUND	PECKED	20	14	6
BASIN METATES									
P 1	0	1	3030	WHOLE	UNMOD		38	21	8
P 1	0	2	3050	WHOLE	UNMOD	LONG. STRIAE	39	30	6
F17	0	1	3030	WHOLE	UNMOD		53	43	7
F19	0	1	3050	WHOLE	UNMOD	PECKED	28	15	6
C10	0	1	3050	FRAG	UNMOD	LONG. STRIAE			
C11	0	1	3050	WHOLE	UNMOD	LONG. STRIAE	32	21	15
IND GRND ST FRG									
P 6	0	1	4000	FRAG	UNKNOWN	UNKNOWN			

SITE NUMBER: 12515

GRID/FEA	LEVEL	ART #	MATERIAL	CONDITION	MANUFACTURE	UTILIZATION	DIMENSIONS LENGTH	WIDTH	THICK
BASIN METATES									
P1	1	1	3030	FRAG	UNKNOWN	UNKNOWN			

SITE NUMBER: 5138

GRID/FPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
R8	2	28	1050	UNIFACE	WHOLE				INDETERMINATE	3	2	8
D17	C	4	1215	BIFACE	WHOLE	RECTANGULAR				3	2	3
F13	C	1	1051	BIFACE	WHOLE					5	3	17
F14	C	1	1215	UNIFACE	WHOLE	ROUND				3	3	13
J12	C	7	1051	BIFACE	PROXIMAL FRAG.				STRAIGHT	3	2	6

SITE NUMBER: 12161

GRID/FPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
I1	1	1	3524	BIFACE	WHOLE	TRIANGULAR			STRAIGHT GRINDING	7	4	6
I1	1	6	1051	UNIFACE	INDET. FRAG.					3	2	10
I1	1	12	1051	UNIFACE	WHOLE	RECTANGULAR				3	2	13
I1	1	20	1051	UNIFACE	WHOLE					3	2	5
I1	1	62	1050	BIFACE	INDET. FRAG.					2	2	5
I1	1	182	1215	UNIFACE	WHOLE					3	2	7
I1	1	257	3530	BIFACE	WHOLE	TRIANGULAR	SIDE	FLARE	STRAIGHT	2	1	4
I1	1	287	1215	UNIFACE	WHOLE					5	5	21
I1	2	25	1430	UNIFACE	WHOLE	ROUND				2	2	7
R1	2	41	1215	BIFACE	WHOLE	ROUND				3	3	16
R1	2	42	1051	BIFACE	INDET. FRAG.					1	1	4
R1	2	132	3523	BIFACE	INDET. FRAG.					3	3	15
R1	2	159	3530	BIFACE	DISTAL FRAG.					3	1	10
R1	3	4	1050	BIFACE	WHOLE	RECTANGULAR				3	2	7
R1	3	51	1050	UNIFACE	INDET. FRAG.					1	1	5
R1	3	61	3520	BIFACE	WHOLE	OVATE	SIDE	STRAIGHT	STRAIGHT	3	1	5
D 7	C	1	3523	BIFACE	INDET. FRAG.					2	2	3
I 5	C	11	1053	BIFACE	MIDSECTION					2	3	13
I 5	1	28	3530	BIFACE	DISTAL FRAG.					1	1	2
I 6	1	1	1050	BIFACE	WHOLE					3	2	11
I 6	2	20	3523	BIFACE	INDET. FRAG.		INDETERMINATE	INDETERMINATE	INDETERMINATE	2	1	4

SITE NUMBER: 12438

GRID/FPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
R1	55	23	3701	BIFACE	WHOLE					8	6	24
R1	55	26	1214	UNIFACE	WHOLE					3	3	11
R1	55	30	1214	BIFACE	WHOLE					6	3	17

SITE NUMBER: 12442

GRID/FPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
B11	1	5	3530	BIFACE	PROXIMAL FRAG.		SIDE			2	2	6
J 3	1	2	3530	BIFACE	INDET. FRAG.					3	3	8

SITE NUMBER: 12443

GRID/FPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
R1	1	5	3700	BIFACE	WHOLE					4	3	13

SITE NUMBER: 12444

GRID/FPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
H20	1	12	3701	BIFACE	PROXIMAL FRAG.				CONCAVE	4	4	11
K20	1	40	1215	BIFACE	LATERAL FRAG.		INDETERMINATE	INDETERMINATE	INDETERMINATE	3	1	3
L19	1	1	3701	BIFACE	WHOLE				INDETERMINATE	5	7	11
U19	1	1	3701	BIFACE	WHOLE	OVOID			INDETERMINATE	7	4	16
V22	1	1	3701	UNIFACE	WHOLE	OVOID			CONCAVE	8	5	22
AA 1	1	14	3700	UNIFACE	WHOLE					5	4	15
AA 2	1	7	3700	BIFACE	PROXIMAL FRAG.				CONCAVE	3	3	7
BB 3	1	1	3700	UNIFACE	DISTAL FRAG.					4	5	7
BB 3	1	3	3700	BIFACE	DISTAL FRAG.					4	3	5

SITE NUMBER: 12454

GRID/FPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
H 4	1	1	3525	BIFACE	DISTAL FRAG.	TRIANGULAR	INDETERMINATE	INDETERMINATE	INDETERMINATE	3	3	5

SITE NUMBER: 12456

GRID/FPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
F38	0	2	3530	BIFACE	PROXIMAL FRAG.	TRIANGULAR	CORNER	FLARE	STRAIGHT	2	2	5
G38	C	1	3530	BIFACE	WHOLE	TRIANGULAR	CORNER	FLARE	CONVEX	3	2	6
G51	1	5	1051	BIFACE	MIDSECTION	TRIANGULAR	CORNER	INDETERMINATE	INDETERMINATE	2	1	3
G55	C	4	1052	BIFACE	WHOLE	TRIANGULAR	CORNER	STRAICHT	STRAIGHT	2	1	3

J42	C	2	3522	BIFACE	PROXIMAL FRAG.		SIDE	FLARE	CONVEX	1	1	4
M53	C	1	1053	UNIFACE	WHOLE					5	4	16
O14	1	1	3521	BIFACE	WHOLE	TRIANGULAR	CORNER	FLARE	CONVEX	3	2	5
P24	2	1	3700	UNIFACE	WHOLE					6	5	16
Q 6	0	1	3523	BIFACE	WHOLE	TRIANGULAR				3	2	4
W 4	C	1	1530	BIFACE	PROXIMAL FRAG.	TRIANGULAR	SIDE	FLARE	CONCAVE	3	2	4

SITE NUMBER: 12463

GRID/EPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
K 4	C	1	3530	BIFACE	PROXIMAL FRAG.				CONCAVE	9	2	4
L22	1	12	3530	BIFACE	INDET. FRAG.					4	2	5
L24	C	1	3530	BIFACE	PROXIMAL FRAG.				STRAIGHT	2	2	4

SITE NUMBER: 12465

GRID/EPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
P4	1	8	1291	BIFACE	MIDSECTION					2	1	4

SITE NUMBER: 12468

GRID/EPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
P2	C	6	3701	BIFACE	WHOLE	OVATE			GRINDING CONVEX	6	4	10
P3	C	1	3520	BIFACE	PROXIMAL FRAG.				INDETERMINATE	4	2	6

SITE NUMBER: 12486

GRID/EPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
D 9	0	2	3520	BIFACE	PROXIMAL FRAG.		SIDE	FLARE	STRAIGHT	1	3	6
E 7	1	1	3050	BIFACE	WHOLE	OVOID			STRAIGHT	6	4	11
I 2	C	1	3520	BIFACE	WHOLE					3	2	3
I 5	C	1	1051	BIFACE	DISTAL FRAG.				INDETERMINATE	4	4	9
999	0	1	3530	BIFACE	PROXIMAL FRAG.				STRAIGHT	2	2	3
999	0	2	3520	BIFACE	MIDSECTION	TRIANGULAR	INDETERMINATE	INDETERMINATE	INDETERMINATE	1	1	3

SITE NUMBER: 12494

GRID/EPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
F35	1	10	3530	BIFACE	WHOLE	TRIANGULAR	CORNER	FLARE	STRAIGHT	3	2	4
H38	1	1	3701	BIFACE	WHOLE					7	4	25
H40	1	2	3520	BIFACE	DISTAL FRAG.					3	4	7
R37	1	31	3520	BIFACE	PROXIMAL FRAG.		INDETERMINATE	INDETERMINATE	CONVEX	1	1	3
U36	1	20	1052	BIFACE	PROXIMAL FRAG.				CONVEX	3	2	7

SITE NUMBER: 12496

GRID/EPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
P 5	C	25	3520	BIFACE	MIDSECTION					2	2	3
P 7	C	10	3520	BIFACE	INDET. FRAG.					3	2	7
P10	C	4	3525	UNIFACE	WHOLE	TRIANGULAR				4	3	8
P13	C	5	3530	BIFACE	MIDSECTION				INDETERMINATE	3	3	4
P16	C	2	3700	BIFACE	INDET. FRAG.				INDETERMINATE	8	4	22
P18	C	1	3050	BIFACE	INDET. FRAG.					7	7	25
P21	C	1	1525	BIFACE	INDET. FRAG.					3	2	20

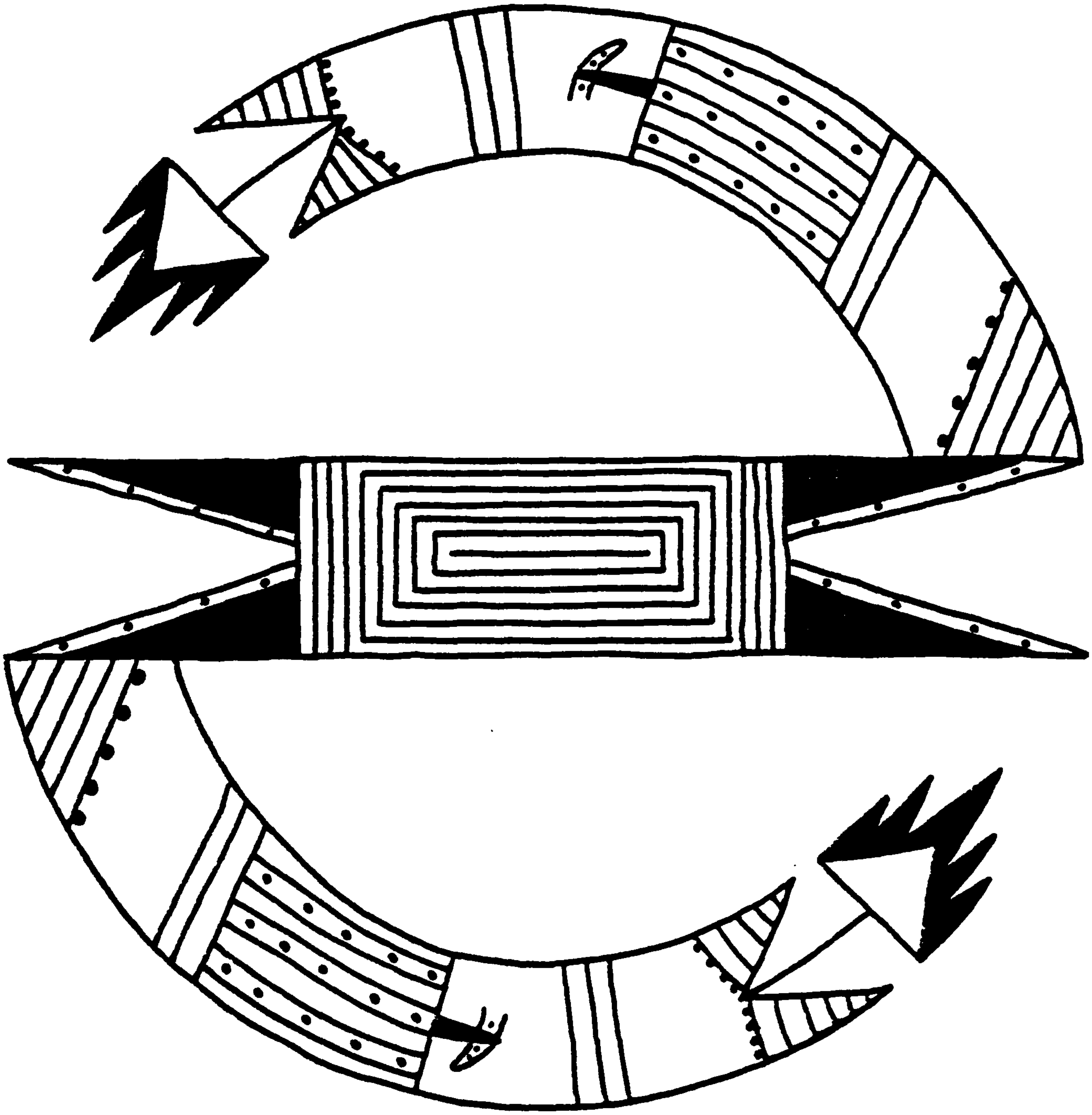
SITE NUMBER: 12507

GRID/EPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
R1	1	2	1215	UNIFACE	WHOLE					2	2	12

SITE NUMBER: 12518

GRID/EPR	LEV	ART#	MATR	RETOUCH	CONDITION	SHAPE	NOTCHES	STEM	BASE	DIMENSIONS LGTH	WDTH	THICK
R1	1	16	1051	BIFACE	WHOLE	RECTANGULAR			INDETERMINATE	3	2	9

REFERENCES CITED



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REFERENCES CITED

Abbink, Emily K. and John R. Stein
1977 An Historical Perspective on Adaptive Systems in the Middle Rio Grande In *Archeological Investigations in Cochiti Reservoir, New Mexico, Vol. 1: A Survey of Regional Variability*. Ed. by J.V. Biella and R.C. Chapman. Office of Contract Archeology, University of New Mexico, Albuquerque.

Agricultural Experiment Station Research Report
1971 *Soil Associations and Land Classification for Irrigation, Sandoval and Los Alamos Counties.* Report No. 188, New Mexico State University, Las Cruces.

Ahler, Stanley A.
1970 Projectile Point Form and Function at Rodgers Shelter, Missouri. *Missouri Archaeological Society, Research Series* 8.

Amsden, C.A.
1931 The Pottery of Pecosl Vol. I. Dull Paint Wares. *Papers of the Phillips Academy Southwestern Expedition*, No. 5, Yale University Press, New Haven.

Beal, John
1975 Personal communication.

Biella, Jan V.
1977 Previous Anthropological Research in the Cochiti Study Area. In *Archeological Investigations in Cochiti Reservoir, New Mexico, Vol. 1: A Survey of Regional Variability*. Ed. by J. V. Biella and R. C. Chapman. Office of Contract Archeology, University of New Mexico, Albuquerque.

Biella, Jan V. and Richard C. Chapman
1975 *An Assessment of Cultural Resources in Cochiti Reservoir.* Ms. Office of Contract Archeology, University of New Mexico, Albuquerque.

1977 *Archeological Investigations in Cochiti Reservoir, New Mexico, Vol. 1: A Survey of Regional Variability*. Office of Contract Archeology, University of New Mexico, Albuquerque.

Binford, Lewis R.
1964 A Consideration of Archeological Research Design. *American Antiquity* 29:425-441.

1968 Post-Pleistocene Adaptations. In *New Perspectives in Archeology*. Ed. by S.R. Binford and L.R. Binford. Aldine, Chicago.

1975 Personal communication.

Binford, L.R., S.R. Binford, R. Whallon and M.A. Hardin
1970 Archaeology at Hatchery West. *American Antiquity* Memoir No. 24.

Breternitz, David A.
1966 An Appraisal of Tree-Ring Dated Pottery in the Southwest. *Anthropological Papers of the University of Arizona*, No. 10, University of Arizona Press, Tucson.

Bussey, Stanley D.
1968 "Excavations at LA 6462, the North Bank Site." The Cochiti Dam Archaeological Salvage Project, Part 1: Report on the 1963 Season, Assembled by Charles H. Lange. *Museum of New Mexico Research Records*, No. 6, Santa Fe.

Chaplin, Raymond E.
1971 *The Study of Animal Bones From Archeological Sites.* Seminar Press, London and New York.

Chapman, Kenneth M.
1970 The Pottery of San Ildefonso Pueblo. *School of American Research Monograph Series* No. 28. University of New Mexico Press, Albuquerque.

Chapman, Richard C.
1971 *Chipped Stone Tools from Unkar Delta.* Ms. on file at the School of American Research, Santa Fe, New Mexico.

1972 *Chipped Stone Tools from the North Rim. Ms. on file at the School of American Re*search, Santa Fe, New Mexico.

1973 The Stone Artifact Assemblage from an Anasazi Site near Burnham, N.M. Ms. Office of Contract Archeology, University of New Mexico, Albuquerque.

n.d. Analysis of the Lithic Assemblages. In *Settlement and Subsistence Along the Lower Chaco River*, Ed. C.A. Reher. In press.

Chapman, Richard C. and James G. Enloe
1977 Survey of Cochiti Reservoir. Methodology. In *Archeological Investigations in Cochiti Reservoir New Mexico Vol. 1: A Survey of Regional Variabiliy.* Ed. by J. V. Biella and R. C. Chapman. Office of Contract Archeology, University of NEw Mexico, Albuquerque.

Clarke, David L.
1968 *Analytical Archaeology.* Mathuen and Company, London.

Crabtree, Don E.
1972 An Introduction to Flintworking. *Occasional Papers of the Idaho State University Museum*, No. 28.

Crabtree, Don E. and B. Robert Butler
1964 Notes on Experiments in Flint Knapping: 1. Heat Treatment of Silica Materials. *Tebiwa*, 7(1):1-6.

Crabtree, D.E. and E.L. Davis
1968 Experimental Manufacture of Wooden Implements with Tools of Flaked Stone. *Science* 159:426-428.

Curtin, L.S.M.
1965 *Healing Herbs of the Upper Rio Grande Valley*, Southwest Museum, Los Angeles.

Dick, Herbert W.
1968 Six Historic Pottery Types from Spanish Sites in New Mexico. In "Collected Papers in Honor of Lyndon L. Hargrave." *Archaeologi-*

cal Society of New Mexico Papers No. 1, Santa Fe.

Dickson, D.B.
1975 Settlement Pattern Stability and Change in the Middle Northern Rio Grande Region, New Mexico. *American Antiquity* 40(2):159-171.

Eighth Southwest Ceramic Seminar
1966 *Rio Grande Glazes*. Museum of New Mexico, Santa Fe.

Ellis, Florence Hawley
1950 Big Kivas, Little Kivas and Moiety Houses in Historical Reconstruction. *Southwestern Journal of Anthropology*, 6(3):286-302.

1967 Where Did the Pueblo People Come From? *El Palacio* 74(3):35-43.

1975 Life in the Tesuque Valley and Elsewhere in the Santa Fe Area During the Pueblo II Stages of Development. *Awanyu*, 3(2), Las Cruces.

Espinosa, J.M.
1942 Crusaders of the Rio Grande: Institute of Jesuit History, Chicago.

Ewing, Rodney C.
1975 Personal communication.

Falk, Carl R.
1969 Bone Antler and Shell Artifacts. Two House Site in the Central Plains: An Experiment in Archeology. Ed. Raymond Wood. *Plains Anthropologist* 14(44), Part 2:39-81.

Flynn, Leo L. and W. James Judge
1973 *An Archeological Assessment of the Canada de Cochiti Grant*. Ms. Department of Anthropology, University of New Mexico, Albuquerque.

Ford, Richard I.
1968 "Floral Remains" In The Cochiti Dam Archaeological Salvage Project, Part I: Report on the 1963 Season. Assembled by Charles H. Lange. *Museum of New Mexico Research Records* No. 6, Santa Fe.

Ford, Richard I., Albert H. Schroeder and Stewart L. Peckham
1972 "Three Perspectives on Puebloan Prehistory." In *New Perspectives on the Pueblos*. Ed. by Alfonso Ortiz. University of New Mexico Press, Albuquerque.

Friedman, Irving and Robert L. Smith
1960 A New Dating Method Using Obsidian: Part I, The Development of the Method. *American Antiquity*. 25(4):476-522.

Frison, George
1968 Daugherty Cave Wyoming. *Plains Anthropologist* 13(42), Part 1:267-295.

1970 The Glenrock Buffalo Jump, Late Prehistoric Period Buffalo Procurement and Butchering. *Plains Anthropologist* 15(50) Mem. 7: 1-66.

Geertz, Clifford
1971 *Agricultural Involution*. University of California Press, Berkeley and Los Angeles.

Gilbert, Miles B.
1969 Some Aspects of Diet and Butchering Techniques Among Prehistoric Indians in South Dakota. *Plains Anthropologist* 14:277-294.

Glassow, Michael A.
1971 Reviews: Early Puebloan Occupations at Tesuque By-Pass and in the Upper Rio Grande Valley. *American Antiquity*, 36(2):225-226, Salt Lake City.

Harlow, Francis H.
1973 Matte-Paint Pottery of the Tewa, Keres and Zuni Pueblos. *Museum of New Mexico*, Santa Fe.

Harris, Arthur
1968 "Faunal Remains." In The Cochiti Dam Archeological Salvage Project, Part 1: Report on the 1963 Season. Assembled by Charles H. Lange. *Museum of New Mexico Research Records* No. 6.

Hawley, Florence M.
1936 Field Manual of Prehistoric Southwestern Pottery Types. *University of New Mexico Bulletin, Anthropological Series*, Vol. 1(4), Albuquerque.

Hayes, Alden C.
1964 The Archaeological Survey of Wetherill Mesa, Mesa Verde National Park, Colorado. *National Park Service, Archaeological Research Series*, No. 7A, Washington.

Hewett, Edgar L.
1905 A General View of the Archaeology of the Pueblo Region. *Annual Report of the Smithsonian Institution for 1904*, Washington. pp. 583-602.

1953 *Pajarito Plateau and its Ancient People*. University of New Mexico Press, Albuquerque.

Hibben, Frank C.
1937 Excavation of the Riana Ruin and Chama Valley Survey. *University of NewMexico Bulletin, Anthropological Ser* 2(1).

Honea, Kenneth H.
1968 "Material Culture: Ceramics." Cochiti Dam Archaeological Salvage P . Part 1: Report of the 1963 Season. Assembled by Charles H. Lange. *Museum of New Mexico Research Records*, No. 6, Santa Fe.

Human Systems Research
1972 *Excavations at Fresnal Shelter*. Human Systems Research, Inc., Albuquerque.

Hurt, Wesley R. and Herbert W. Dick
1946 Spanish American Pottery from New Mexico: *El Palacio*, 53:280-287; 307-311.

Hyatt, R.D., B.H. Butler and H.P. Mosca III
1974 Archaeological Research at Cooper Lake 1970-1972. *Southern Methodist University Contri-*

butions in Anthropology, No. 12. Dallas.

Irwin-Williams, Cynthia
1973 The Oshara Tradition: Origins of Anasazi Culture. *Eastern New Mexico University Contributions in Anthropology*, Vol. 5(1).

Judd, Neil M.
1954 The Material Culture of Pueblo Bonito. *Smithsonian Misc. Collections*, Vol. 24.

Keller, Charles M.
1966 The Development of Edge Damage Patterns on Stone Tools. *Man* 1:501-511.

Kidder, Alfred V.
1924 An Introduction to the Study of Southwestern Archaeology with a Preliminary Account of the Excavations at Pecos. *Papers of the Phillips Academy Southwestern Expedition*, No. 1. Yale University Press, New Haven.

Kidder, A.V. and A.O. Shepard
1936 The Pottery of Pecos, Vol. 2, *Papers of Phillips Academy*, No. 7.

Knudsen, Ruth Ann
1973 *Organizational Variability in Late Paleo-Indian Assemblages.* Ph.D. dissertation, Washington State University, Pullman.

Kues Barry S.
1975 Personal communication.

Lang, R.W.
1975 Personal communication.

Lange, Charles H.
1959 *Cochiti: A New Mexico Pueblo, Past and Present.* University of Texas Press, Austin.

Lange Charles H. (ed)
1968 The Cochiti Dam Archaeological Salvage Project Part 1: Report on the 1963 Season. *Museum of New Mexico Research Records* No. 6, Santa Fe.

Luebben, Ralph A.
1953 "Leaf Water Site." Salvage Archaeology in the Chama Valley, New Mexico. Assembled by Fred Wendorf. *Monographs of the School of American Research*, No. 17, Santa Fe.

McGregor, John C.
1965 *Southwestern Archaeology*. University of Illinois Press, Urbana.

McNutt, Charles H.
1969 Early Puebloan Occupations at Tesuque By-Pass and in the Upper Rio Grande Valley. *Anthropological Papers*, Museum of Anthropology, University of Michigan, No. 40, Ann Arbor.

Marchiando, Patricia J.
1977 Faunal Resources in the Cochiti Study Area. In *Archeological Investigations in Cochiti Reservoir, New Mexico, Vol. 1: A Survey of Regional Variability*. Ed. J.V. Biella and R.C. Chapman. Office of Contract Archeology, University of New Mexico, Albuquerque.

Martin, Paul S., William A. Longacre and James N. Hill
1967 Chapters in the Prehistory of Arizona, III. *Fieldiana Anthropology*, Vol. 57, Field Museum Press, Chicago.

Matson, Frederick (Ed.)
1965 Ceramics and Man. *Viking Fund Publications in Anthropology*, No. 41.

Mera, H.P.
1933 A Proposed Revision of the Rio Grande Glaze Paint Sequence: *Laboratory of Anthropology, Technical Series, Bulletin* No. 5, Santa Fe.

1934 A Survey of the Bisquit Ware Area in Northern New Mexico: *Laboratory of Anthropology, Technical Series, Bulletin* No. 6, Santa Fe.

1935 Ceramic Clues to the Prehistory of North Central New Mexico: *Laboratory of Anthropology, Technical Series, Bulletin* No. 8, Santa Fe.

1939 Style Trends of Pueblo Pottery: *Memoirs of the Laboratory of Anthropology*, Vol. 3, Santa Fe.

1940 Population Changes in the Rio Grande Glaze-paint Area: *Laboratory of Anthropology Technical Series, Bulletin* No. 9, Santa Fe.

Nance, J.D.
1971 Functional Interpretations from Microscopic Analysis, *American Antiquity* 36:361-366.

Nelson, Nels C.
1916 Chronology of the Tano Ruins, New Mexico. *American Anthropologist*. 18(2):159-180.

Peckham, Stewart
1975 Personal communication.

Reed, Erik K.
1943 The Southern Tewa Pueblos in the Historic Period. *El Palacio* 50:254-264, 276-288.

1949 Sources of Upper Rio Grande Culture and Population. *El Palacio* 56(6):163-184.

Reher, Charles
1975 Personal communication.

Robinson, William J., John W. Hannah, and Bruce G. Harrill
1972 Tree-ring Dates from New Mexico I, O, U Central Rio Grande Area: Laboratory of Tree-Ring Research, University of Arizona, Tucson.

Roscoe, John T.
1969 *Fundamental Research Statistics for the Behavioral Sciences.* Holt, Rinehart and Winston, Inc., New York.

Schmid, Elizabeth
1972 *Atlas of Animal Bones for Prehistoric Archeologists and Quaternary Geologists.* Elsevier Publishing Co., Amsterdam-London-New York.

Schoenwetter, James and Alfred E. Dittert, Jr.
1968 An Ecological Interpretation of Anasazi

Settlement Patterns. In "Anthropological Archaeology in the Americas." Ed. by Betty J. Meggers. *Anthropological Society of Washington*, Washington. pp. 41-66.

Schwartz, Douglas W., and R.W. Lang
1973 *Archaeological Investigations at the Arroyo Hondo Site: Third Field Report – 1972.* The School of American Research, Santa Fe.

Seager, William R.
1975 Personal communication.

Semenov, S.A.
1964 *Prehistoric Technology*. Barnes and Noble, London.

Shepard, Anna O.
1942 Rio Grande Glaze Paint Ware: Contributions to American Anthropology and History, No. 39, *Carnegie Institution of Washington Publication* 528, Washington.

1965 Rio Grande Glaze-paint Pottery: A Test of Petrographic Analysis: In Ceramics and Man. Ed. by F.R. Matson. *Viking Fund Publications in Anthropology* No. 41.

Smiley, T.L., S.A. Stubbs, and Bryant Bannister
1953 A Foundation for Dating of Some Late Archaeological Sites in the Rio Grande, New Mexico Based on Studies in Tree Ring Methods and Pottery Analysis. *University of Arizona Bulletin*, Vol. 24(3). *Laboratory of Tree-Ring Research Bulletin*, No. 6, Tucson.

Snow, C.T. and A.H. Warren
1974 Pukis and Pottery Molds, *Pottery Southwest*, Vol. 1(1):1-2.

Snow, David H.
1971a *Excavations at Cochiti Dam, New Mexico: 1964-1966 Seasons.* Ms. Museum of New Mexico. Santa Fe.

1971b *The Excavation of Salt Bush Pueblo, Bandelier National Monument, New Mexico.* Unpublished Ms. Museum of New Mexico, Santa Fe.

1972 *A Report on the Impact of Cochiti Dam on the Archeological Resources of the Cochiti Area, New Mexico.* Ms. Museum of New Mexico. Santa Fe.

1973a Archeological Excavation of the Torreon Site, LA 6178, Cochiti Dam, New Mexico. Ms. Museum of New Mexico *Laboratory of Anthropology Notes* No. 76. Santa Fe.

1973b Cochiti Dam Salvage Project: Archeological Investigations at LA 8720, Cochiti Dam, New Mexico. Ms. Museum of New Mexico, *Laboratory of Anthropology Notes* No. 87. Santa Fe.

1973c Archeological Excavations of the Las Majadas Site, LA 591, Cochiti Dam, New Mexico. Ms. Museum of New Mexico, *Laboratory of Anthropology Notes* No. 75. Santa Fe.

Sperry, James E.
1968 The Sherman Site. *Plains Anthropologist* 13(42), Part 2:62-76.

Speth, J.D. and G.A. Johnson
1976 Problems in the Use of Correlation for the Investigation of Tool Kits and Activity Areas. In *Cultural Change and Continuity*, Ed. by C.E. Cleland. Academic Press, New York.

Stanford, Dennis J.
1973 *Origins of Thule Culture*. University of New Mexico Ph.D. dissertation.

Steward, Julian H.
1938 Basin-plateau Aboriginal Sociopolitical Groups. *Bureau of American Ethnology Bulletin* 120. Washington, D.C.

1955 *Theory of Culture Change*. University of Illinois Press, Urbana.

Stubbs, Stanley A. and W.S. Stallings, Jr.
1953 The Excavation of Pindi Pueblo. *Monograph of the Laboratory of Anthropology and School of American Research*, No. 18, Santa Fe.

Toulouse, Joseph H., Jr.
1949 The Mission of San Gregorio de Abo: *Monographs of the School of American Research* No. 13, Santa Fe.

Tringham, R., G. Cooper, G. Odell, B. Voytek and A. Whitman
1974 Experimentation in the Formation of Edge Damage: A New Approach to Lithic Analysis. *Journal of Field Archaeology* 1 (1, 2):171-196. Boston.

U.S. Army Engineers
1974 *Final Environmental Statement. Cochiti Lake, Rio Grande, New Mexico.* U.S. Army Engineer District, Albuquerque. Albuquerque.

Vierra, R.K. and R.L. Taylor
1974 A Spatial Analysis Method for Isolating and Recognizing Overlapping Spatial Distributions. Paper presented at the 39th annual meeting of the Society for American Archaeology.

Warren, A.H.
1967a Petrographic Analysis of Pottery and Lithics, pp. 104-131 in "An Archaeological Survey of the Chuska Valley and the Chaco Plateau, New Mexico."

1967b Petrographic Analysis of Pottery and Lithics. An Archaeological Survey of the Chuska Valley and the Chaco Plateau, New Mexico. Part 1, Natural Science Studies, *Museum of New Mexico Records*, No. 4, Santa Fe.

1968 Petrographic notes on Glaze-paint Pottery, in The Cochiti Dam Archaeological Salvage Project. Part 1: Report on the 1963 Season. Assembled by Charles H. Lange. *Museum of New Mexico Research Records*, No. 6, Santa Fe.

1969 Tonque: One Pueblo's Glaze Pottery Industry. *El Palacio* 76(2):36-42.

1970 Notes on Manufacture and Trade of Rio Grande Glazes. *The Artifact*, Vol. 9(4):1-8.

1974 The Pottery and Mineral Resources of Pueblo del Encierro and the Cochiti Area. *Laboratory of Anthropology Notes* No. 98, Santa Fe.

1977 Geology and Mineral Resources of White Rock Canyon and the Cochiti Area, Sandoval County, New Mexico. In *Archeological Investigations in Cochiti Reservoir, New Mexico: Volume I.* Edit d by J.V. Biella and R.C. Chapman. In Press.

Wendorf, Fred

1953 "Excavations at Te'ewi." Salvage Archaeology in the Chama Valley, New Mexico, assembled by Fred Wendorf. *Monographs of the School of American Research*, No. 17, Santa Fe.

1953 Salvage Archaeology in the Chama Valley, New Mexico. *Monographs of the School of American Research*, No. 17, Santa Fe.

1954 A Reconstruction of Northern Rio Grande Prehistory. *American Anthropologist* 56(2): 200-227.

Wendorf, Fred and Donald J. Lehmer

1956 Archaeology of the Wingate Products Line. Pipeline Archaeology. *Laboratory of Anthropology and Museum of Northern Arizona.* Santa Fe and Flagstaff.

Wendorf, Fred. and Erik K. Reed

1955 An Alternative Reconstruction of Northern Rio Grande Prehistory: *El Palacio* 62:131-173.

Whallon, R., Jr.

1973 Spatial Analysis of Occupation Floors I: Application of Dimensional Analysis of Variance. *American Antiquity* 38:266-278.

1974 Spatial Analysis of Occupation Floors II: The Application of Nearest Neighbor Analysis. *American Antiquity* 39:16-34.

White, Leslie A.

1959 *The Evolution of Culture.* McGraw-Hill, New York.

White, T.E.

1952 Observations on the Butchering Techniques of Some Aboriginal Peoples, No. 1. *American Antiquity* 13:337-338.

Whiting, Alfred F.

1966 *Ethnobotany of the Hopi*, Northland Press, Flagstaff.

Wilmsen, Edwin N.

1968 Functional Analysis of Flaked Stone Artifacts. *American Antiquity* 33:156-161.

Winship, George P.

1896 The Coronado Expedition, 1540-1542: *Bureau of American Ethnology, 14th Annual Report.*

Wissler, Clark

1915 Explorations in the Southwest by the American Museum. *American Museum Journal* 15(8):395-398.

Witthoft, John

1967 Glaze Polish on Flint Tools. *American Antiquity* 32:383-388.

Worman, Frederick C.V.

1967 *Archeological Salvage Excavations on the Mesita del Buey*, Los Alamos County, New Mexico: Los Alamos Science Laboratory of the University of California.